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BEFORE THE BOARD OF OIL, GAS AND MINING

DEPARTMENT OF NATURAL RESOURCES

STATE OF UTAH

UTAH CHAPTER OF THE SIERRA CLUB, et al, Petitioners, vs. UTAH DIVISION OF OIL, GAS & MINING, Respondents, ALTON COAL DEVELOPMENT, LLC, and KANE COUNTY, UTAH Respondent/Intervenors.	**RESPONDENT ALTON COAL DEVELOPMENT, LLC'S CLOSING BRIEF ON HYDROLOGY AND GEOLOGY CLAIMS** Docket No. 2009-019 Cause No. C/025/0005

Alton Coal Development, LLC ("**Alton**" or "**ACD**"), the permittee of Mine Permit No. C/025/0005 ("**Permit**"), through its attorneys, submits its closing brief regarding the geology and hydrology claims raised by petitioners Utah Chapter of the Sierra Club, Southern Utah Wilderness Alliance, Natural Resources Defense Council, and National Park Conservation

Association (collectively, "**Petitioners**") in the April 30, May 21-22, and June 11, 2010 hearings before the Board of Oil, Gas and Mining ("**Board**").

BURDEN OF PROOF AND STANDARD OF REVIEW

The Board has ruled that the Petitioners bear the burden of proving that the Division's decision to approve the Coal Hollow Mine permit was contrary to the evidence or arbitrary or capricious. (See Order Concerning Scope and Standard of Review 3-5, Bd. of Oil, Gas & Mining, Docket No. 2009-019 (January 13, 2010) (the "**January Order**"). The Board's ruling is consistent with rules adopted pursuant to the federal Surface Mining Control and Reclamation Act ("**SMCRA**"), which explicitly place the burden of proof on the petitioner seeking reversal of the approved permit. 30 C.F.R. § 775.11(b) (5) (2008) ("The burden of proof at such hearings shall be on the party seeking to reverse the decision of the regulatory authority."). The January Order is also consistent with the allocation of duties for mine permit review and approval between the Division and Board pursuant to the Utah Coal Mining and Reclamation Act ("**UCMRA**").

In its January Order, the Board also determined that where the Division has made a factual finding or judgment on substantial scientific or technical matters, the Board will defer to the Division's decision unless the Petitioners show that the Division's decision was "contrary to the evidence or otherwise arbitrary or capricious." (January Order at 4.) That determination was based in part upon the significant time and staff resources directed by the Division to review and process the mine permit application. *Id.* ("Board deference to the Division's lengthy, in-depth review on technical issues is also warranted in light of the roles of the Division and Board, and the amounts of time the UCMRA and implementing regulations allot to each to carry out their tasks.") In this case, the Division and the applicant spent more than three years working toward an approved permit from June 27, 2006, when the application was submitted, until October 19,

2009, when the mine permit was approved. State Decision Document and Application Approval, Permitting Chronology (Ex. D-1 at \Coal_Hollow\2009\Outgoing\10192009\001.pdf).

Each of the geologic and hydrologic findings before this Board contemplates the review of a finding made by the Division that was based upon substantial scientific or technical matters. As a result, each Division Finding is subject to the deference described above. In order to show that any of the challenged findings should be reversed, the Petitioners are required to demonstrate more than simply that an alternative course of action would have been superior in some fashion. Instead, under the law of this case, Petitioners must show that the Division's decision was "contrary to the evidence or otherwise arbitrary or capricious," as this Board has ruled. January Order at 4.

Utah courts define the arbitrary and capricious standard of review in administrative proceeding as a test of "reasonableness." See Bourgeois v. Dept. of Commerce, 41 P.3d 461, 463 (Utah Ct. App. 2002). Specifically, this Board's actions have been upheld where it based its decision upon "substantial evidence" and therefore it had not acted in an arbitrary and capricious manner. See Road Runner Oil, Inc. v. Board of Oil, Gas and Min., 76 P.3d 692, 698 (Utah App. 2003). Utah courts have defined 'substantial evidence' as being of a "quantum and quality of relevant evidence that is adequate to convince a reasonable mind to support a conclusion." Associated General Contractors v. Board of Oil, Gas and Mining, 38 P.3d 291, 298 (Utah 2001); See also Motor Vehicle Mfrs. Assn. v. State Farm Mutual Auto. Ins. Co., 463 U.S. 29, 43 (1983) (agency's action needs to be supported only by an explanation containing the "rational connection between the facts found and the choices made.")

In this action, the Petitioners carry the burden of proving that, for each challenged finding, the evidence on which the Division relied was inadequate to convince a reasonable mind

to support its conclusions. As demonstrated at hearing and in the administrative record, Petitioners have failed to meet their burden and the Board is compelled to uphold the Division's decision to approve the Coal Hollow Mine Permit.

This brief presents the applicable rule of law and legal authority regarding Petitioners' geology and hydrology challenges to Alton's mine permit considered at the Board Hearings on April 30, May 21-22 and June 11, 2010. For each of the eight remaining challenges, Alton will identify the issue as articulated by the Petitioners, confirm the Division's Findings and summarize the evidence at hearing and in the administrative record supporting the decision to approve the Coal Hollow Mine Permit.

DISCUSSION OF ISSUES

1. Petitioners' Issue 10: Whether the Division's Cumulative Hydrologic Impact Assessment ("CHIA") for the Coal Hollow Mine unlawfully fails to establish at least one material damage criterion for each water quality or quantity characteristic that the Division requires ACD to monitor during the operations and reclamation period.

DIVISION'S FINDINGS: "An assessment of the probable cumulative impacts of all anticipated coal mining and reclamation activities in the general area on the hydrologic balance has been conducted by the Division and no significant impacts were identified. See Cumulative Hydrologic Impact Assessment ("CHIA") dated October 15, 2009 (Ex. D-1 at \Coal_Hollow\2009\Outgoing\10192009\001.pdf). The Mining and Reclamation Plan ("MRP") proposed under the revised application has been designed to prevent damage to the hydrologic balance in the permit area and in associated off-site area." Id. at Findings ¶ 3. The Division further concluded that the CHIA complies with all applicable federal and state laws. CHIA at 4.

ARGUMENT IN SUPPORT OF THE DIVISION'S FINDINGS AND PERMIT APPROVAL

No provision of Utah's coal program requires designation of a specific numeric value to define material damage criteria in the CHIA for each water quality or quantity parameter that will be monitored by the operator. As a condition of permit approval, UCMRA requires that the Division prepare and use a CHIA to determine the effect on hydrological resources in connection

with "all anticipated mining" that will occur within any hydrologic unit outside the permit area. Utah Code § 40-10-11(2) (c) (LexisNexis 2009). The CHIA is based on a statement of Probable Hydrologic Consequences ("**PHC**") prepared by the applicant. Utah Code § 40-10-10(2) (c). The Board's rules require that the CHIA shall be:

> sufficient to determine, for purposes of permit approval whether the proposed coal mining and reclamation operation has been designed to prevent material damage to the hydrologic balance outside the permit area.

Utah Admin. Code R645-301-729.100 (2009).

The inherent problem with Petitioners' argument regarding this issue is that the Petitioners have confused the purpose of the CHIA. At all times during mining and reclamation operations, the operator is subject to a separate enforceable performance standard to minimize disturbance to the hydrologic balance within the permit area and adjacent area, and to prevent material damage outside the permit area. Utah Admin. Code R645-301-750. Both the federal district court in West Virginia and the federal Office of Surface Mining ("**OSM**") have rejected the notion that the CHIA should be a tool for enforcing this performance standard. See Ohio River Valley Envt'l Coalition v. Callaghan, 133 F. Supp 2d 442, 445 (S.D.W.V. 2001) ("Noncompliance with design requirements and regulatory standards may be demonstrated by reference to the CHIA, but what dictates the content and supporting information of a CHIA is the design function, not its utility as an enforcement tool."); Office of Surface Mining, Permanent Regulatory Program Hydrology Permitting and Performance Standards, 48 Fed. Reg. 43,956, 43,973 (Sep. 26, 1983).

Petitioners' evidence at hearing failed to prove that the design of the Coal Hollow Mine would not prevent material damage to the hydrologic balance outside the permit area. Petitioners' witness acknowledged that the mine had been designed to prevent discharge of any

water from the site, and because he had not reviewed "the application or the hydrology in sufficient detail to (render) an opinion as to whether (he) thought it accurate or not" he was unable to comment on whether the permit design would or would not allow any discharge from the mine. Testimony of Charles Norris, Hrg. Tr. 718:2–20. Mr. Norris also testified that he knew of no particular link between the Utah State water quality standards applicable to surface waters in the area and the hydrologic balance. Hrg. Tr. 717:8–15. Without reviewing the application or hydrology, Norris was not competent to render any opinion on the topic and should never have testified.[1]

On the other hand, Alton's expert hydrologist, Erik Petersen, testified that he prepared a statement of PHC on behalf of Alton to take into consideration all of the *probable* hydrologic consequences based on his field investigation and baseline data and that the design of the mine included specific features to avoid or minimize damage to the hydrologic balance. Testimony of Erik Petersen, Hrg. Tr. 493:9–496:23. The Division explained that it evaluated Alton's design features related to hydrology and determined that the mine as designed was unlikely to cause material damage to the hydrologic balance outside the permit area. Testimony of April Abate, Hrg. Tr. 561:20–562:22. The Division testified that the CHIA, as prepared, accomplished its intended purpose as a tool for mine design. Hrg. Tr. 629:22–25. Petitioners' witness offered no criticism of the mine's design.[2]

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[1] Alton objected to Norris testifying as an expert regarding the hydrology issues relating to the permit application and its review by the Division. See Hrg. Tr. 642:8-644:9. He was not sufficiently familiar with any aspect of the permit or the review process by the Division to testify as an expert as to whether the Division had or had not exceeded its authority. Alton does not waive its objection.

[2] Petitioners made an untimely effort to raise selenium levels as an issue; however, Alton's expert hydrologist testified that he concluded after significant investigation that conditions at the mine site did not give rise to a concern about elevated selenium levels in waters of the permit or adjacent areas. Petersen Testimony, Hrg. Tr. 749.21-750-9. the baseline monitoring data provided by ACD to the

Petitioners' argument regarding establishing a specific numerical criteria within the CHIA to define material damage essentially asks the Board to remand the permit because the CHIA failed to address the *improbable* hydrologic consequences of the operation. As explained above, this position is not supported by the rules governing preparation of the CHIA document. Again, the CHIA is a design tool and because the CHIA is formulated based upon *probable* hydrologic consequences of the specific mining operation, the Division must evaluate the potential that the mine's design will adequately prevent material damage from those probable consequences. The CHIA serves as a check to assure that no mine is permitted when the mine design will not prevent the occurrence of material damage to the hydrologic balance outside the permit area.

Selection of monitoring protocols and action levels in the CHIA are not mandated by either rule or statute and are left to the Division's sound technical judgment. For those adverse hydrologic consequences that are *likely to occur*, the Division must assure through its CHIA analysis that the mine is designed to either minimize or prevent them. For those adverse hydrologic effects that are *improbable*, the mine is under the strict performance standard to

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Division included results for 262 laboratory analyses for selenium in surface waters and in groundwater from wells, springs and alluvial trenches. The result of these analyses show that only three samples contained more than 0.03 milligrams per liter (mg/L) of selenium. No selenium was detected in any of the other 259 samples (with a lower detection limit is 002 mg/L). Additionally, 57 samples of alluvial sediments, Tropic Shale bedrock and Dakota Formation bedrock were analyzed for total selenium concentration. As indicated in App. 6-2 of the MRP, no selenium was detected in any of these samples (with a detection limit of 5 mg/kg). Similarly, laboratory analysis of water extractable selenium was performed on 53 samples of alluvial sediments. Tropic Shale bedrock and Dakota Formation bedrock. The result of these analyses indicate that of these 53 samples, none had extractable selenium concentrations exceeding 0.20 mg/kg and 50 of the 53 samples had concentrations less than 0.10 mg/kg. For comparison, as noted in the MRP, all of the materials analyzed would be considered suitable for use as topsoil under the rules in the State of Wyoming. Clearly, there is no apparent concern with selenium in the Coal Hollow Mine area. However, in an abundance of caution, the Division will require Alton to conduct monitoring for selenium. Ex. D-8, Final TA at 109-110. Notably, Petitioners offered no evidence that increased selenium concentrations were a probable hydrologic consequence of Alton's mine operations.

prevent material damage, and the Division is required to take any action up to and including a cessation order when that standard is violated. See R645-301-750.

Not only did the Petitioners fail to present any proof of a requirement to set out specific numerical material damage criteria standards, but their own witness, Mr. Norris, had no idea of the relevance of Utah Water Quality Standards to Utah's Coal Program. When asked whether he had any information on whether the Division of Water Quality had considered the effects of the proposed mining on the hydrologic balance when it set the specifications for Kanab Creek or Lower Robinson Creek, he candidly answered, "No, I don't know." Hrg. Tr. 717:8-15. The Petitioners' sole basis for raising the issue was the opinion of Mr. Norris that material damage criterion should be part of the CHIA and a failure to do so was a fatal flaw in the CHIA. This "opinion" is not based upon any rule or regulation that Mr. Norris could pinpoint, but rather his "opinion" as to what was appropriate. When asked by Alton as to whether any jurisdiction had adopted his approach, Mr. Norris indicated that he had advised West Virginia that this method should be required, but that they did not agree with his approach. Hrg. Tr. 713:13-15. Alton cannot be required to comply with a permitting goal that is neither defined within any statue, rule or regulation, but is merely on the "wish list" of the Petitioners. This concept creates a moving target that Alton will never be able to satisfy and this approach is unenforceable.

Without citing to any applicable basis for their objection, other than Mr. Norris's own personal preference, Petitioners have failed to prove that the CHIA falls short of any applicable legal standard under the Utah Coal Program. Norris acknowledged that there is no definition for material damage within any Utah statute when asked the direct question by Board Member Gill. Hrg. Tr. 728:6; see also Hrg. Tr. 709:16-710:8. It is not within the province of the Division to create new requirements for Alton or any other permit applicant.

The evidence presented at hearing supports the Division's Finding that the CHIA was prepared, as required, based on Alton's PHC statement and that the mine's design incorporated measures to address those probable hydrologic consequences. Further, the Division, in its CHIA, determined that the MRP, as designed, would prevent material damage to the hydrologic balance outside the permit area. CHIA at 4 (Ex. D-1 at Coal_Hollow\2009\Outgoing\10192009\001.pdf). As a result, Petitioners' claims on this issue fail and the Division's approval of ACD's mine permit should be affirmed.

2. Petitioners' Issue 11: Whether the Division's CHIA for the Coal Hollow Mine unlawfully fails to designate the applicable Utah water quality standard for total dissolved solids (a maximum concentration of 1,200 milligrams per liter) as the material damage criterion for surface water outside the permit area.

DIVISION'S FINDING: "The Mining and Reclamation Plan ("MRP") proposed under the revised application has been designed to prevent damage to the hydrologic balance in the permit area and in the associated off-site area." Ex. D-1, Findings ¶ 3 (October 15, 2009). The Division further concluded that the CHIA complies with all applicable federal and state laws. Ex. D-1, CHIA 4 (October 15, 2009).

ARGUMENT IN SUPPORT OF THE DIVISION'S FINDING AND PERMIT APPROVAL

The Utah Coal Program rule adopting the Utah Water Quality Standards[3] regulates "*discharges of water* from areas disturbed by coal mining and reclamation operations." Utah Admin. Code R645-301-751 (emphasis supplied). Even though Petitioners seek to apply 1,200 milligrams per liter ("**mg/L**") standard for total dissolved solids ("**TDS**") to the CHIA, there are at least three important reasons that prevent applying this standard as a material damage criterion for surface waters outside the permit area.

[3] The water quality standards at issue are promulgated by the Utah Water Quality Board under the authority of Utah's Water Quality Act and the federal Clean Water Act ("**CWA**"). Utah Code § 19-5-104.

First, the actual rule, R645-301-751, appropriately applies to discharges of water from the disturbed area within the mine. Ignoring the applicable rule, Petitioners incorrectly seek to expand application of the regulation to bodies of water outside the disturbed area located some distance from the mine site discharges in an area subject to non-mining impacts.

Second, unlike the CHIA, which addresses *design* standards for the mine, R645-301-751 articulates a *performance* standard that the operator must meet throughout the life of mining and reclamation operations. This fallacy in the Petitioners' arguments is the result of their improper interpretation of the requirements of the CHIA. The design standards of the CHIA serve a different purpose than the applicable water quality enforcement standards. OSM has rejected such an attempt to press the CHIA's design standards into service to enforce water quality standards under the federal Clean Water Act ("**CWA**"): "The SMCRA mandate that proposed mines be designed to prevent material damage to the hydrologic balance is not a vehicle for using SMCRA to enforce CWA standards." Office of Surface Mining, West Virginia Regulatory Program, 73 Fed. Reg. 78,970, 78,977 (Dec. 24, 2008).

Third, exceedance of water quality standards is a separate issue that may, or may not, indicate material damage to the hydrologic balance outside the permit area. OSM has flatly rejected the argument (made in comments on a proposed change to West Virginia's coal program regulations) that CWA water quality standards are enforceable under SMCRA's mandate to prevent material damage to the hydrologic balance. The problem with that approach, OSM explains, is that the water quality standards present no particular reason to also conclude that the hydrologic balance is being materially damaged:

> OSM disagrees with the statement that effluent limitations and water quality standards constitute predetermined material damage criteria. [The commenting party] is under the misguided

> impression that 30 CFR 816.42 and 817.42 establish fixed material damage criteria for coal mining operations. While the plain language of these regulations require discharges of water from mining operations to be in compliance with applicable State and Federal water quality laws and regulations as well as the EPA effluent limitations for coal mining operations, there is no assertion that discharges that violate such laws and regulations somehow automatically constitute material damage to the hydrologic balance. *Obviously discharges that do not comply with either the effluent limitations or water quality standards should be considered performance standard violations by the regulatory agency, but whether such discharges constitute material damage to the hydrologic balance is another issue entirely.*

Id. at 78,977–78 (emphasis supplied). OSM's well-reasoned rejection of an identical claim asserted against an identical federal regulation should persuade the Board that there is no legal requirement under the Utah Coal Program that any of these standards appear in the CHIA as criteria for material damage to surface water bodies.

In weighing the evidentiary value of the opinions of Mr. Norris, the Board should consider that neither Mr. Norris nor any other witness for the Petitioners have taken any water quality samples whatsoever to dispute any baseline data reported by Alton or findings by the Division. The baseline data acquired over many years by Alton and others cannot be assailed by the Petitioners merely because they do not like the results. Petitioners' contention that any TDS reading above 1200 mg/L will constitute material damage *per se* ignores the fact that Alton's baseline data already document TDS readings above that level. Mr. Norris could not dispute that portions of several water sources in the area already exceed the 1200 mg/L standard for TDS. Hrg. Tr. 701-702.

Because of Alton's extensive baseline data, much of the evidence at hearing addressed the peripheral question of whether the Division's decision to identify 3000 mg/L TDS as an

action level[4] triggering investigation of possible damage to surface hydrology, was supported by that data in the Division's database. Ex. D-2 (Division's Hydrologic Database). Petitioners failed to establish the preponderance of evidence to contradict the Division on this point. The Petitioners took no independent water quality samples and they were unable to counter any of the Division's Findings from the State's extensive hydrologic database.

Petitioners' one attack on the existing data point exceeding 3000 mg/L TDS at SW-101 on Lower Robinson Creek was refuted by Mr. Petersen, who explained both data quality concerns raised by Mr. Norris. Hrg. Tr. 746:22–748:1 ("specific" conductance); 748:2–25 (nonlinear correlation between specific conductance and TDS). Contrary to Mr. Norris' conclusion, the hydrologic baseline data for the Coal Hollow Mine contains additional measurements of TDS exceeding 3000 mg/L. A recent surface water measurement at SW-101 has also exceeded this amount. Hrg. Tr. 744:18–745:16. Moreover, Mr. Petersen testified that a spring near Sink Valley Wash has also been observed at values exceeding 3000 mg/L. Hrg. Tr. 745:17–746:7.

Finally, regardless of the dispute over how to interpret the "Price map" depicting typical TDS levels throughout the region, both the Division's and Petitioners' hydrologists testified that the map showed that a TDS range of up to 3000 mg/L could be expected from existing pre-mining conditions in and around Lower Robinson Creek during periods of low flow. D. Price, Chemical Quality of Surface Water in the Alton-Kolob Coal Fields Area, USGS Map 1-21235-A

[4] This level was described in some testimony as an "index" or "indicator" parameter, Hrg. Tr. 708:12–709:8, or a "material damage criterion." Hrg. Tr. 560:19–25. None of these terms is defined by rule or statute, although they are discussed as concepts from a 1985 draft OSM guideline. (Ex. D-26). Alton has adopted the term "action level" for the purposes of this brief.

(1980) (Ex. D-24); see Abate Testimony, Hrg. Tr. 551:13–20, 621:6–17; Norris Testimony, Hrg. Tr. 682:7–13.

Ultimately, the dispute over TDS levels is a difference of opinion on how the baseline data should be used to alert the operator and the Division to the possibility of material damage to the hydrologic balance. In this technical decision, the Division is entitled to rely upon the judgment of its own staff experts, and the Board has already ruled that it will defer to the Division's reasonable technical conclusions. January Order at 4–5. At the hearing, the Division explained its rationale for using the 3000 mg/L action level as a means of discriminating between normally-occurring high TDS levels and potential unexpected but adverse effects on the hydrologic balance by operations at the Coal Hollow Mine. Abate Testimony, Hrg. Tr. 560:8–25, 566:10–567:14. The Division explained that setting the action level for TDS at the lower 1,200 mg/L standard would prevent the Division from distinguishing between the mine's effects and background conditions. Abate Testimony, 566:2–17; 566:24–567:14; 587:12–25. The Division further explained that it included State water quality standards in its analysis. Hrg. Tr. 542:19–543:10; 560:11–561:19; 564:12–19. The evidence, discussed above, shows that TDS levels up to and exceeding 3000 mg/L, if not common, is nevertheless part of the existing baseline data. The Division's selection of an action level to detect non-baseline mining effects at 3000 mg/L TDS is supported by the existing data and their sound scientific judgment. The alternative is that depending upon the time of the year and other circumstances, an arbitrary imposition of the 1,200 mg/L standard would result in Alton's violation of material damage action levels before it even begins operations at the Coal Hollow Mine. Such a result could be challenged as arbitrary and capricious.

Apart from the question of whether, and how often, TDS levels exceeding 3000 mg/L have been observed in the pre-mining hydrologic data, there is little practical difference between the Petitioners' position and the Division's approach. Petitioners' witness testified that, in his view, exceeding his proposed 1200 mg/L Utah water quality standard for TDS would be a violation of the material damage prohibitions *if the mine were the cause of the increase*. Hrg. Tr. 717:16–718:1. The Division's approach, set forth in the CHIA, establishes 3000 mg/L as the level at which the Division and Alton, together, would investigate to determine whether the mine was responsible for the increase. Both positions reflect the same basic approach: when observed TDS concentration reaches some pre-determined action level, the Division will investigate the cause of the increase. The remaining dispute over the numeric level at which that investigation should begin is a matter of technical judgment for which the Division has expressed a reasonable basis. Under the law of this case, set forth in the Board's January 13, 2010 Order, the Division's decision should therefore be affirmed.

3. Petitioners' Issue 12: Whether ACD's Hydrologic Monitoring Plans are unlawfully incomplete because they fail to describe how the monitoring data that ACD will collect may be used to determine the impacts of the Coal Hollow Mine upon the hydrologic balance.

DIVISION'S FINDING: The hydrologic information provided by Alton meets the requirements of the Utah Coal Rules. Ex. D-8, Final TA 116.

ARGUMENT IN SUPPORT OF THE DIVISION'S FINDING AND PERMIT APPROVAL

The Board's rules require that the operations plan submitted with the Permit Application Package ("**PAP**") sets forth specific plans for monitoring the quality and quantity of surface and groundwater resources:

> The permit application will include a ground-water monitoring plan based upon the PHC determination required under R645-301-728 and the analysis of all baseline hydrologic, geologic and other

> information in the permit application. The plan will provide for the monitoring of parameters that relate to the suitability of the ground water for current and approved post-mining land uses and to the objectives for protection of the hydrologic balance set forth in R645-301-731. It will identify the quantity and quality parameters to be monitored, sampling frequency and site locations. It will describe how these data may be used to determine the impacts of the operation upon the hydrologic balance. At a minimum, total dissolved solids or specific conductance corrected to 25 degrees C, pH, total iron, total manganese and water levels will be monitored.

R645-301-731.211. A similar requirement applies to surface-water monitoring. See R645-301-731.220 to 731.224.

Petitioners contend that Alton's surface and groundwater monitoring plans are deficient because they do not provide a step-by-step description which the general public can use to determine the impacts of the operation upon the hydrologic balance. Apparently, Petitioners are seeking a succinct section of the MRP which would provide a guideline to the public regarding how to interpret this data. Such a citizen's "recipe" for "how to" use quantity and quality data provided in Alton's monitoring plans exceeds what is specifically required by R645-301-731.211 or 731.220-224.[5]

At hearing, the Division testified that ACD's monitoring plan is designed to prevent material damage outside the permit area and adequately satisfies the Division's regulatory requirements. Hrg. Tr. 445:12-19. While the Division confirmed that the plans do not expressly

[5] The Division's website contains such a citizen guide under the heading "Coal Mining Hydrology Information Center." The website provides answers to water quality and quantity questions, explains how mining can affect water quality and quantity, how mining can intercept water and provides mining hydrology references. http://ogm.ut.gov/coal/water/default.htm. The Division's website also provides public access to the Utah Coal Mining Water Quality Database providing the baseline and operational water quality data for the Coal Hollow Mine and other Utah coal mines. *Id.*

state how the extensive hydrologic database will be used to determine these impacts, the Division states that the use of this data collected pursuant to the monitoring plan is implicit.

> Mr. Alder: You said that the monitoring plan doesn't explicitly say how it is to be used. You almost hesitated, as if you were going to say "implicitly." Do you believe it implicitly is understood how the monitoring plan is to be used?
>
> Mr. Smith: Yes. I believe it is very implicit. That's the whole purpose of the monitoring plan. It would be senseless to have a monitoring plan if it weren't to be used. It would be nonsense.

Hrg. Tr. 472:21–473:4; see Hrg. Tr. 464:16–21.

The Division further testified that quarterly hydrologic data produced in response to ACD's hydrologic monitoring plans are examined for potential impacts by the permittee and the Division. Hrg. Tr. 474:19-25, 475:1-14; 476:4-12. If the permittee or the Division determine that the data are inconsistent with the baseline data, the Division is authorized to inspect the site on the basis of the data and undertake enforcement action if necessary to bring impacts on water quantity or quality into compliance. Hrg. Tr. 476:13-25; 477:1-20. The Division also testified that the plans did not need to specifically describe how the data would be used to establish compliance because these are standard practices followed by the Division for responding to such data. Hrg. Tr. 480:8-25; 481:1-25; 482:1-9. The Division testified that the Division hydrologists use the data from the monitoring plans to identify trends in the data. Hrg. Tr. 440:10-25; 441:1-25; 442:1-9. Further, the Division explained how the monitoring plans work in conjunction with the operator's description of probable hydrologic consequences and the Division's cumulative hydrologic impact assessment. Hrg. Tr. 415-420.

Mr. Petersen, Alton's expert hydrologist, also testified that it was implicit that monitoring data from ACD's plans were to be used to assure compliance. Hrg. Tr. 514:24-15; 515:1-12. In

addition, discussions about how information from the monitoring plan may be used to detect mining related impacts is contained within the monitoring plan and elsewhere in the Coal Hollow Mine MRP.

Petitioners offered no witness testimony on this issue. Further, Petitioners did not prove through cross-examination that the Coal Hollow MRP was inadequate on this issue. In fact, the Coal Hollow MRP includes unambiguous statements about which explicitly-defined hydrologic features are to be monitored at each monitoring location. Permit App at 7-57 thru 7-59 (Ex. D-1 at \Coal_Hollow\MRP\Coal Hollow 025005\Volume 7.pdf). The monitoring plan also clearly defines the monitoring protocols to be used at each monitoring site (i.e., which flow, water level, and water quality parameters are to be analyzed). *Id.* at Tables 7-4, 7-5, 7-6, 7-7. The basis for monitoring each of the hydrologic features, and any potential impacts that may occur to these features as a result of mining, are clearly spelled out in the statement of probable hydrologic consequences (PHC), which is a companion document to the monitoring plan. *Id.* at 7-24 thru 7-34. It is clearly implied that the monitoring data collected during the prescribed monitoring activities will be used to assess whether the potential mining-related impacts described in the PHC have occurred.

Specifically, the PHC determination for the Coal Hollow Mine indicates the potential for short term decreases in discharge rates to specific springs east and south of the mining area, and possibly (though unlikely) some increases of certain defined chemical constituents in waters potentially interacting with the Tropic Shale. *Id.* at 7-38 thru 7-29. In other words, the PHC defines what the potential impacts may be, where the potentially impacted area may be located, and what exactly may be impacted.

As stated in Section 731.200 of the Permit Application, the monitoring plan including its accompanying monitoring plan map (Drawing 7-10) and monitoring protocols (Tables 7-4, 7-5, 7-6, and 7-7) is designed explicitly to allow for the detection of these potential impacts:

> *"the monitoring plan is designed to monitor groundwater and surface-water resources for any impacts that could potentially occur as a result of mining and reclamation activities in the proposed Coal Hollow Mine permit and adjacent area. Each of the sampling locations and their monitoring purpose are described below."*

Id. at 7-57. The text that follows in the monitoring plan describes the purpose for each of the monitoring locations (i.e., which hydrologic feature is monitored at each monitoring station and which monitoring parameters are included for each monitoring station). *Id.* at 7-57 thru 7-59. Thus, the obvious way that the monitoring data may be used to detect mining impacts is by looking at monitoring data from any area of interest and determining whether changes to the specified parameter (as explicitly described in the PHC determination and also described in Section 720, which is a description of the pre-mining groundwater and surface water conditions and resources) have occurred.

Additionally, the monitoring plan states explicitly how the data from monitoring site SP-3 may be used differently than the other monitoring points when investigating potential mining impacts. *Id.* at 7-58. The text of the monitoring plan states that the use of monitoring data from SP-3 is primarily to "provide background data from springs in the region." *Id.* In other words, monitoring information from SP-3 is intended to provide a regional control point from an area that will not be impacted by mining, from which non-mining-related influences (such as climate) may be evaluated when investigating mining impacts.

Additional information on how monitoring information may be used to evaluate mining-related impacts to water quality and water quantity is provided in Chapter 7 of the Coal Hollow

Mine MRP. In Section 731.800 of the operating plan, Alton provides a description of how the monitoring data will be used to evaluate for mining related impacts:

> Alton Coal Development, LLC commits to replace the water supply of an owner of interest in real property who obtains all or part of his or her supply of water for domestic, agricultural, industrial, or other legitimate use from the underground or surface source, where the water supply has been adversely impacted by contamination, diminution, or interruption, proximately resulting from the surface mining activities. Baseline hydrologic information required in R645-301-624.100 through R645-301-624.200, R645-301-625, R645-301-626, R645-301-723 through R645-301-724.300, R645-301-724.500, R645-301-725 through R645-301-731, and R645-301-731.210 through R645-3-1-731.233 will be used to determine the extent of the impact of mining upon ground water and surface water.

Id. at 7-61 to 7-62. Clearly, this statement indicates that a comparison of operational monitoring information (which is the only type of information that *can* be collected once the mining operation commences) should be made with the baseline monitoring information as required in the listed rules to determine whether the groundwater or surface water supply has been adversely impacted by mining operations. This is a clear description of how water monitoring information may be used to detect mining impacts to the hydrologic balance.

Similarly, this section indicates how water monitoring information from a spring in the alluvial groundwater system east of the Coal Hollow Mine (SP-40, Sorensen Spring) may be used to detect potential mining-related impacts to the spring and by inference to other springs in the monitoring plan:

> Monitoring of discharge rate and water quality is included in the proposed water monitoring plan for the Coal Hollow Mine. The operational and reclamation phase water monitoring protocols for this spring are listed in Tables7-5 and 7-7A. Should the water source be interrupted, diminished, or contaminated, replacement water will be provided from the new water well …

Id. at 7-62. This section clearly requires that monitoring information collected during operational and reclamation phases (once the mining has commenced) should be used to make a comparison with the baseline data (data collected prior to the commencement of mining) to determine whether the water source has been impacted in its quality or quantity by mining.

Additional specific items were included in Chapter 7 of the MRP for the express purpose of facilitating the evaluation of monitoring data and identification of potential mining-related impacts. These include:

a. **Characterization of seasonal variation in water quality and quantity.** A characterization of the baseline seasonal variation in water quality and quantity is provided in the MRP. *Id.* at 7-14 thru 7-21; see Appx 7-1 at 26. The baseline monitoring activities at the Coal Hollow Mine area have been extensive. *Id.* One of the primary purposes for the collection of this data is to provide information to the regulatory agencies and to the general public on the pre-mining hydrologic balance in the permit and surrounding areas (i.e. information on seasonable variability in water quantity and quality). The information submitted to the Division's publicly accessible on-line database includes approximately 1,000 individual monitoring events from more than 60 monitoring sites. Ex. D-2. This information includes the results of more than 260 comprehensive laboratory water quality analyses, more than 580 water flow rate measurements, more than 350 well water level measurements, and more than 430 field water quality measurements (temperature, pH, and specific conductance). *Id.*

b. **Alton has greatly exceeded the Division's recommendation of two years of baseline data collection prior to the beginning of mining.** Alton has submitted five years of baseline data to the Division's publically accessible database (MRP, Section 721) that was collected during both climatically wet and dry periods and under all seasonal conditions.

Additional hydrologic information from a previous mining application in the 1980's has also been submitted to this database. Ex. D-2. This enormous dataset provides information to the regulatory agencies and the general public on seasonal variation in water quality and water quantity against which comparisons may be made with conditions during the period of the mine's operation and reclamation phases to detect mining related impacts to the hydrologic balance.

c. Information and examples illustrating how to use and interpret the monitoring data to detect mining-related impacts is provided throughout Chapter 7 of the Coal Hollow Mine MRP. Ex. D-1. Some of these references are listed below.

i **Water Quality Analysis Using Stiff Diagrams**: The Permit Application describes a specific technique whereby the chemical type and TDS concentrations of waters provided in the monitoring data may be compared. Permit App at 7-7, 7-8, 7-13 and Appx 7-1, Fig. 14 (Ex. D-1 at \Coal_Hollow\MRP\Coal Hollow 025005\Volume 7.pdf). This technique involves a graphical representation of water quality characteristics by means of Stiff (1951) diagrams. The use of Stiff diagrams to compare waters of differing chemical types and TDS concentrations is a widely used and scientifically accepted geochemical tool. The general technique used in this analytical method is described and an example of its application is provided. *Id.* at Appx 7-1, Figure 14. The use of Stiff diagrams may be used to detect mining related impacts to groundwaters and surface waters in the permit and adjacent area using monitoring data.

> Stiff (1951) diagrams depicting solute chemical compositions for groundwaters and surface-waters are shown on Figure 14. Stiff diagrams are a useful analytical tool in evaluating the geochemical compositions of groundwaters and surface-waters. The solute

> composition (chemical type) of the water is represented by the shape of the diagram. The size of the Stiff diagram is a function of the total dissolved solids (TDS) concentration.

Id. at Appx. 7-1 p. 13.

ii **Detection of Down-Gradient Degradation in Water Quality.** A technique is described (and an example of its application provided) whereby monitoring data may be used (analyzed graphically using specific conductance values) to detect down-gradient degradation in water quality. *Id.* at 7-7. This technique may be used to evaluate whether water quality has been impacted by mining operations. There is also a description of how specific conductance monitoring data have been and could be used to evaluate the dissolved solids concentrations of waters when laboratory total dissolved solids data are not available. See *Id.* at Dwg 7-5 (Ex. D-1 at \Coal_Hollow\MRP\Coal Hollow 025005\Volume 7.pdf). The graphical technique described involves the plotting on a map of circles representing the specific conductance of water monitoring data. The size of the circle is determined by using a correlation of circle area with specific conductance. Using this method, high TDS water is represented with a big circle, low TDS waters with proportionally smaller circles. *Id.*

> *The average specific conductance values in µS/cm for representative springs and seeps in the Sink Valley Drainage are plotted on the map as circles with the circle area being proportional to the specific conductance average for the spring or seep. It is readily apparent from Drawing 7-5 that the specific conductance (which is a reflection of the total dissolved solids concentration) is degraded from the mountain-front recharge water (represented by stream SW-8) to the artesian groundwater system in the northwest quarter of Section 29, T5W, R39S, to the alluvial groundwaters in the southern portion of Sink Valley below the Coal Hollow Mine permit area.*
>
> *Specific conductance values were used for plotting in Drawing 7-5 because specific conductance values are available for all springs and seeps, while laboratory analyses are available for only some of the seeps/*

Id. at 7-7.

iii **Palmer Hydrologic Drought Index**: A discussion of the Palmer Hydrologic Drought Index (PHDI) is provided in the MRP. Permit App at 7-18, Appx. 7-1 p. 6-7 and Fig. 3 (Ex. D-1 at \Coal_Hollow\MRP\Coal Hollow 025005\Volume 7.pdf). Several graphs of the PHDI are also provided as well as an explanation of how the PHDI is generated. Additionally, a discussion of how it may be used to evaluate potential mining-related impacts to water quantity in groundwater or surface-water systems (i.e. to discriminate between changes caused by climatic variability and those caused by mining impacts) is provided. A link to the National Climatic Data Center (NCDC) web site where additional data could be obtained was provided. *Id.* at Appx. 7-1 p. 49. The MRP specifically describes the PHDI and its relevance to the Coal Hollow Project Area as follows:

> *A plot of the Palmer Hydrologic Drought Index for Utah Region 4 (which includes the Coal Hollow Project area) is presented in Figure 2.* The PHDI is a monthly value generated by the National Climatic Data Center that indicates the severity of a wet and dry spell. The PHDI is computed from climatic and hydrologic parameters such as temperature, precipitation, evapotranspiration, soil water recharge, soil water loss, and runoff. Because the PHDI takes into account parameters that affect the balance between moisture supply and moisture demand, the index is useful for evaluating the long-term relationship between climate and groundwater recharge and discharge data. The PHDI is a useful tool for determining whether variations in spring and stream discharge rates are the result of climatic variability or whether they are the result of other factors.

Id. at p. 7-18. This section describes the PHDI as a useful tool that will be used for evaluating whether changes to the quantity or quality of water (as observed in the monitoring data) are a result of changes to the prevailing climatic conditions or to other factors (i.e. mining impacts).

iv **Solute Chemistry of Surface and Groundwater**: A detailed discussion of the solute chemistry of groundwaters and surface waters is provided. *Id.* at Appx. 7-1 p. 13-15. This discussion includes descriptions of the chemical reactions by which water

quality characteristics of groundwater and surface waters are acquired. *Id.* Similarly, this discussion details the specific chemical reactions and pathways by which interactions with local materials may result in degradation of the water quality of groundwaters and surface waters (e.g. the Tropic Shale). *Id.* Having an understanding of these chemical reactions and chemical evolutionary pathways allows the user of the monitoring data to evaluate how changes to **specific and identified** water quality parameters may occur as a result of specific mining activities, which is clearly a useful tool that allows the determination of potential mining related impacts using monitoring information.

v **Defining Impacts to Water Quality**: A description of what specific chemical parameters would be expected to increase were waters allowed to interact with the Tropic Shale is provided. *Id.* at 37. This allows the user of the monitoring data to evaluate whether such mine impacts may have occurred based on the concentrations of these parameters over time as reported to the Division and regularly uploaded into the Division's publically available on-line water quality database by Alton:

> *The potential for TDS increases associated with interaction of waters with the Tropic Shale can be minimized by avoiding contact where practical between water sources and earth materials containing soluble minerals. Where possible, groundwater that will be encountered in alluvial sediments along the margins of mine pit areas will be routed through pipes, ditches or other conveyance methods away from the mining areas via gravity drainage so as to prevent or minimize the potential for interaction with sediments disturbed by mining operations (including contact with the mined coal seam).* **If diverted alluvial groundwater were allowed to interact extensively with the Tropic Shale bedrock or Tropic Shale-derived alluvial sediments, similar increases in magnesium, sulfate, bicarbonate, and TDS concentrations would be anticipated.**

Id. (emphasis added)

This information provides the user with a clear indication of which water quality parameters would likely be impacted by mining operations if interactions with the Tropic Shale sediments were to occur (as described in the PHC determination). Obviously, the user would use the monitoring information to compare the concentrations of these constituents before mining with those occurring during or after mining.

vi **Additional Data Analysis Tools:** Table 7-12 lists each valid water right in the permit and adjacent area, its typical flow range determined from the monitoring data, whether a potential impact mechanism has been identified in the PHC, and the ACD monitoring plan identification number corresponding with the Utah State water right number. *Id.* at Table 7-12. This table was created largely to facilitate the evaluation of potential mining-related impacts using monitoring information. Table 7-10 is a comprehensive table that provides information for wells in the permit and adjacent area. *Id.* at Table 7-10. This table includes information on whether the well is included in the monitoring plan, the monitoring protocols, the collar and ground elevations, the typical minimum and maximum depths to water based on water monitoring information, well total depths and screened intervals, the geologic formation in which the well is screened, and the maps in the MRP that show the location of the well. This table was created largely to facilitate and simplify the evaluation of mining-related impacts using monitoring information. Table 7-9 is a table that provides information for springs in the permit and adjacent area. *Id.* at Table 7-9. This table includes information on the monitoring status and monitoring protocols of the spring in the operational monitoring plan, any water right associated with the spring and the water right owner, the average flow range for the spring based on water monitoring information, and the maps that show the location of the spring. *Id.* Table 7-9 was

created largely to facilitate and simplify the evaluation of mining-related impacts using monitoring information.

In sum, the MRP, including Alton's hydrologic monitoring plans, adequately describe how the monitoring data may be used to determine the impacts of mining on the hydrologic balance. The Division's Finding confirming that ACD's hydrologic information meets the requirements of the Utah Coal Program should be affirmed. The evidence on which the Division relied in reaching this Finding was more than adequate to convince a reasonable mind to support its conclusions. The Petitioners have failed to meet their burden of proof to overturn the Division's Findings; therefore, the Board is compelled to uphold the Division's decision to approve the Coal Hollow Mine Permit.

4. Petitioners' Issue 13: Whether ACD's Hydrologic Monitoring Plan is unlawfully incomplete because it fails to include remedial measures that ACD proposes to take if monitoring data show trends toward one or more material damage criteria.

DIVISION'S FINDING: The hydrologic information provided by Alton meets the requirements of the Utah Coal Rules. Ex. D-8, Final TA at 116.

ARGUMENT IN SUPPORT OF THE DIVISION'S FINDING AND PERMIT APPROVAL

This Board's rules spell out the range of remedial measures that may be required of an operator to protect water resources. See R645-301-731. The plan should identify remedial measures designed to (1) avoid acid drainage, (2) prevent additional contributions of suspended solids to streamflows, (3) provide water treatment facilities when needed, and (4) control drainage. Also required are measures to (5) protect or replace appropriated water rights, and (6) address any potential adverse consequences identified in the PHC determination. Id. The Division *may require* additional preventative, remedial or monitoring measures which it deems necessary to prevent material damage to the hydrologic balance in the adjacent area. Id.

Contrary to Petitioners' allegations, no specific provision of the Utah rules requires the operator to specify remedial measures merely based upon *trends* in the monitoring data.

Petitioners have failed to prove the absence of any necessary remedial measure from ACD's monitoring plan. At the hearing, witnesses for the Division and Alton, as well as Board members, had little trouble identifying remedial measures related to the probable hydrologic consequences of the Coal Hollow Mine.[6] Smith Testimony, Hrg. Tr. 437:1–16, 450:24–455:11, 465:11–457:3, 458:24–460:10; Petersen Testimony 498:1–500:7.

In addition, the MRP identifies the following preventative and remedial measures in response to R645-301-731:

a. **Avoid acid and toxic drainage**: Chapter 6 of the MRP provides a complete acid and toxic laboratory analysis for each geologic stratum that will be disturbed by mining. Permit App at Appx 6-2 (Ex. D-1 at \Coal_Hollow\MRP\Coal Hollow 025005\Volume 6.pdf). A discussion of this data as it relates to acid mine drainage is provided in MRP Chapter 7. Permit App at 7-35, 7-36 (Ex. D-1 at \Coal_Hollow\MRP\Coal Hollow 025005\Volume 7.pdf). This discussion also includes measures to avoid acid and toxic drainage.

b. **Prevent to the extent possible additional contributions of suspended solids to streamflows:** Chapters 5 and 7 of the MRP discuss numerous design measures to prevent additional contributions of suspendable solids to streamflows. Permit App at 7-73 to 7-92 (Ex. D-1 at \Coal_Hollow\MRP\Coal Hollow 025005\Volume 7.pdf); Permit App at Appx 5-

[6] Petitioners focus on remedial measures triggered by rising TDS levels. Hrg. Tr. 458:5–7. This water quality impact is identified in the PHC as an *unlikely* consequence of mine operation, although preventive and remedial measures are discussed. Permit Application at 7-37 (Ex. D1 at /Coal_Hollow/MRP/Coal Hollow 025005/Volume 7.pdf.); see Petersen Testimony, Hrg. Tr. 500:22–501:18.

2, Drawings 5-22 to 5-34 (Ex. D-1 at \Coal_Hollow\MRP\Coal Hollow 025005\). For example, sedimentation pond and ditch systems are designed to contain a 100 year storm event (which significantly exceeds the regulatory design requirement for temporary structures) to prevent storm/snowmelt runoff from flowing from the adjacent area into the permit area and also to keep water in the disturbed mine area from discharging into stream channels. ACD has designed the mine as a zero water discharge operation. Other measures include construction of berms and diversion ditches to control runoff from the facilities area and diversion ditches along roads to capture runoff.

c. **Provide water treatment facilities when needed:** The Coal Hollow Mine has been designed for zero water discharge; therefore, the need for treatment facilities is not anticipated. Should these facilities become needed, ACD will comply with R645-301-731 to provide the necessary water treatment.

d. **Control drainage:** Similar to Alton's controls for suspended solids to stream flows, pond and ditch systems are designed to provide control of all drainage. Ex. D-1; Chapter 7, 7-73 through 7-92; Chapter 5, Appendix 5-2 and Drawings 5-22 through 5-34.

e. **Protect or replace appropriated water rights:** The MRP is designed to protect all appropriated water rights using practical mining controls. These controls include the installation of a permanent low permeability barrier along the northeastern mining boundary and a contingency plan to minimize impacts to springs and seeps sourced by the adjacent alluvial water system. Ex. D-1, Chapter 7, pages 7-40 through 7-41, Appendix 7-9 and Appendix 7-10. ACD has also provided a back up source for replacing water rights with water from a new well

as detailed in Chapter 5 Drawings 5-3 and 5-8C. ACD also has a water lease with the Town of Alton to provide replacement water. Ex. D-1, Appendix 7-8 (confidential binder.)

f. **Address any potential adverse consequences identified in the PHC:** Preventative and remedial measures have been developed for each consequence identified in the PHC including:

i **Direct interception of groundwater systems.** ACD addresses this concern in two ways: (1) a contingency plan was developed for the period when the mine operations are active, and (2) a low permeability shale barrier was developed for use once the operations are complete and pits are backfilled. Ex. D-1, Chapter 7, Appendix 7-9 (contingency plan) and Chapter 7, Appendix 7-10 (shale barrier details).

ii **Groundwater flow paths through mine openings, diminishing flow down gradient.** Impacts from this mechanism are mainly addressed through avoidance; however, ACD has also developed a contemporaneous reclamation process that consists of backfilling pits within a short timeframe to minimize the impacts to water resources by mine openings. (The general sequence for this backfilling process and reclamation). Ex. D-1, Chapter 5, Drawings 5-16 through 5-19 and is described in Chapter 5, 5-65 through 5-68.

iii **Mine openings intercepting groundwater systems diminishing upgradient water resources.** Avoidance by not mining the contiguous coal reserves to the east is the most significant measure taken to prevent diminishing upgradient water resources. In addition, the contingency plan and the permanent barrier serves as measures to control flow of water into mine openings both during the mining process and

post-mining. These measures directly minimize the potential for this mechanism to result in an adverse hydrologic consequence. Ex. D-1, Chapter 7, Appendix 7-9 and 7-10.

As set forth above, ACD's MRP, including its hydrologic monitoring plan, has clearly provided a comprehensive set of preventative and remedial designs to prevent material damage to the hydrologic balance. The MRP and the hydrologic monitoring plan provide more than adequate evidence to convince a reasonable mind to support the Division's Findings. The Petitioners have failed to meet their burden of proof to overturn the Division's Findings and the Board is compelled to uphold the Division's decision to approve the Coal Hollow Mine Permit.

5. Petitioners' Issue 14: Whether ACD's geologic information is unlawfully incomplete because ACD failed to drill deeply enough to identify the first aquifer below the Smirl coal seam that may be adversely affected by mining.

DIVISION'S FINDING: The Geologic Resources information in the permit application was found adequate under the applicable rules and statutes. Ex. D-8, Final TA 55 (October 19, 2009). The Division determined that the first aquifer below the coal seam was the Navajo Aquifer, which was unlikely to be affected owing to its depth and isolation from the proposed mining. Id. at 62.

ARGUMENT IN SUPPORT OF THE DIVISION'S FINDINGS AND PERMIT APPROVAL

Contrary to the allegations of the Petitioners, Alton provided adequate geologic information to support the Division's Findings. First, Alton drilled through the coal seam into the stratum beneath the Smirl coal seam as required by the Utah Coal Program. The UCMRA requires that the applicant provide "chemical analyses of the stratum lying immediately underneath the coal to be mined." Utah Code § 40-10-10(2)(d)(i)(F) (LexisNexis 2009).

In addition, the rules require a description of the geology and sampling "down to and including the deeper of either the stratum immediately below the lowest coal seam to be mined or any aquifer below the lowest coal seam which may be adversely affected by mining." Utah

Admin. Code R645-301-624.100, 624.200 (2009) (emphasis added.) An aquifer is defined as "a zone, stratum, or group of strata that can store and transmit water in sufficient quantities for a specific use." R645-100-200. Because no aquifer that would be adversely affected by the mining exists, ACD satisfied this requirement by drilling down to and describing the stratum below the Smirl coal seam.

a. The Applicant Provided All Required Analysis of the Stratum Below the Smirl Coal Seam

There is no dispute that the specified information for the stratum immediately below the lowest coal seam to be mined was included in Alton's permit application. Permit Application, Chapters 6 and 7 (Ex. D-1 at \Coal_Hollow\MRP\Coal Hollow 025005\ Volume 6.pdf and Volume 7.pdf). The Division found that Alton collected and adequately analyzed this stratum for the potential of acid and toxic forming materials both above and below the coal seam. Ex. D-8, Final TA at 54. Specifically, Alton conducted a drilling program and collected cuttings and cores from six locations within the project area including bore holes into the stratum immediately below the coal seam. *Id.*, citing Appx. 6-2 of the permit application. The Division found this information adequate to meet geologic resource information requirements. Ex. D-8, Final TA at 55. This is all the analysis required because the Division appropriately found no aquifer below the lowest coal seam which may be adversely affected by mining. Ex. D-8, Final TA at 61. Alton rejects the Petitioner's unfounded argument that a "complete and accurate permit application" must contain not only the information identified in the coal rules, and not only a discussion of the rationale for choices made, but sufficient "data" to permit third parties to rule out other remote possibilities.

b. No Aquifer Exists Below the Lowest Coal Seam which May be Adversely Affected by Mining

The Division correctly found that "[T]here are no wells in the proposed permit and adjacent area that produce water from the Tropic Shale or Dakota Formation. Mining of the Smirl coal, at the Tropic-Dakota interface, is not expected to intercept significant volumes of water from those strata or adversely impact any aquifer below the coal." Ex. D-8, Final TA at 61. Evidence at hearing failed to conclusively show an aquifer located below the Smirl coal seam which will be adversely affected by Alton's proposed coal mining activities. Lips' Testimony, Hrg. Tr. 1411:17-21; 1412:20-24.

The basic premise of the testimony brought forth by the Petitioners was that Alton had not ruled out every conceivable possibility that an aquifer adversely impacted by mining exists below the coal seam in the Dakota Formation. However, the Utah Coal Program does not require this standard. Further, Petitioners produced no evidence to show that such an aquifer exists:

> MR. BAYER: All the information that was given to the Division—and you don't know what they went through for their analysis—but all the information given to the Division by ACD and the Division acquired on their own, they came up and made the determination that there was not an aquifer that would be materially impacted. You don't have any information to dispute that, do you?
>
> MR. LIPS: That's correct.

Hrg. Tr. 1413:15-23.

Further, Petitioners failed to produce samples or thorough investigations to establish whether the material below the coal seam was a stratum of fireclay, which was essential to their

argument that the drilling had not been conducted to a sufficient depth. However, under cross-examination by Mr. Alder, Mr. Lips was again unable to state anything conclusively.

> MR. ALDER: So you did not look for possible signs of vegetative material, roots or slickened sides, other things that are considered by geologic authorities to be indicative of an underclay beneath a coal seam.
>
> MR. LIPS: No, I didn't.

Hrg. Tr. 1401:21-25.

This is not semantics. Mr. Lips' entire testimony was in the context of "what if." He never presented any proof whatsoever that the Division had made any incorrect analysis and the Petitioners cannot be allowed to come in and endlessly create artificial scenarios to contradict the Findings of the Division.

Rank speculation is insufficient to refute the Division's conclusion that the Navajo Sandstone is the first aquifer below the coal seam within the boundaries of the Coal Hollow Mine Permit. The Petitioners again used Mr. Lips, over objection by Alton, to testify whether Alton had met the requirements of the regulations. Mr. Lips specifically testified that he had not identified any aquifer that would be adversely impacted.

> MR. BAYER: You haven't found one yet, have you?
>
> MR. LIPS: I have not.

Hrg. Tr. 1412:5-7.

c. Alton is not Required to Drill the Dakota Formation in Search of an Aquifer

Finally, Petitioners are incorrect in their contentions that Alton has an additional requirement to drill further in search of an aquifer when none is known to exist. In this case, it is

undisputed that no specific groundwater use from an aquifer originating below the coal seam exists within the Coal Hollow Mine permit area. The groundwater use that exists at or near the mine site has its source in the shallow alluvial aquifer above the coal seam. Permit Application at 7-3 (Ex. D-1 at /Coal_Hollow/MRP/Coal Hollow 025005/Volume 7.pdf). Two seeps (SP-27 and SP-34) thought to emanate from the Dakota Formation south of the permit area flow only rarely, and have no beneficial use. Permit Application at 7-4 (Ex. D-1); Petersen Testimony, Hrg. Tr. 1433:7-21.

One spring (SP-4) producing less than one gallon per minute ("**gpm**") (average discharge of 0.71 gpm from baseline monitoring data) for stockwatering exists about a mile south of the permit area in a position where Alton's hydrologist believed that association with a fault was possible. Ex. D-1, Permit Application at 7-4; Petersen Testimony 1435:14–1436:2. The Division concluded that this small spring with a flow of less than 1 gpm would not be adversely impacted by mining of the Smirl coal. Ex. D-8, Final TA at 61. At hearing, testimony from several witnesses supported the Division's Finding that this spring is not evidence of an aquifer below the coal seam to be mined, or likely to be adversely affected by mining.

First, testimony showed that the spring is located more than a mile from the southern permit boundary. Lips Testimony, Hrg. Tr. 1362:3–5; Permit App Dwg. 7-2 (Ex. D-1 at \Coal_Hollow\MRP\Coal Hollow 025005\DWG. 7-2.pdf). Second, the rock strata in the area dip to the east and north (Permit App Dwg. 6-1 (Ex. D-1 at \Coal_Hollow\MRP\Coal Hollow 025005\DWG. 6-1.pdf); Goode, H.D., Prelim. Geol. Map of the Bald Knoll Quadrangle (1973) (Ex. P-40). Consequently it is very unlikely that the flow path for the groundwater that is the source of discharge at SP-4 could pass beneath the Coal Hollow Mine area (i.e., flow of groundwater in the Dakota Formation through sandstone strata, were it to occur, would likely

migrate from the south to north or from west to east (down dip), while the spring is located south of the mine area. Petersen Testimony, Hrg. Tr. 1436:8–16. This would preclude the likelihood that the hypothetical flow path or groundwater storage reservoir for SP-4 could include regions underlying the mine area.

Accordingly, the Dakota Formation sandstone layer that is exposed in the Lower Robinson Creek stream channel represents the truncated up-dip end of that member. Ex. D-1, MRP, Ch 7, Pages 7-37. Areas to the east are uniformly overlain by the marine Tropic Shale, which is of very low permeability. Permit App at 6-4, 7-3, 7-4 (Ex. D-1 at Coal_Hollow\MRP\Coal Hollow 025005\ Volume 6.pdf and Volume 7.pdf). Discharge of Dakota Formation groundwater at a spring from such a system as hypothesized by Mr. Lips (at the truncated up-dip end of the member) is unlikely. Petersen Testimony, Hrg. Tr. 1436:8–1437:6; see Lips Testimony, Hrg. Tr. 1374:23–1375:14. Third, SP-4 emerges in the lower portion of the several-hundred-foot thick Dakota Formation, whereas the coal seam is in contact with the upper portion. Petersen Testimony, Hrg. Tr. 1436:17–22, 1438:20–1439:9.

Fourth, the permeability of the Dakota Formation is known to be low between the permit area and SP-4. Permit App at 7-4 (Ex. D-1 at \Coal_Hollow\MRP\Coal Hollow 025005\Volume 7.pdf) ("Because of the pervasiveness of interbedded low-permeability horizons in the formation and the vertical and lateral discontinuity of sandstone horizons, the potential for vertical and horizontal movement of groundwater is limited."); Petersen Testimony, Hrg. Tr. 1440:25–1441:20. This testimony supports the Division's Finding that, "The Dakota Formation is not a good aquifer," Ex. D-8, Final TA at 62, citing Ex. D-1, Permit App at 6-12.

By contrast, the Petitioners failed to provide any evidence of an aquifer that may be adversely affected by ACD's mining. The sole basis for Petitioners' attack is not that there is proof of the existence of an aquifer that will be materially affected, but conjecture that because there are several seeps or springs in the area, there would be a water bearing formation. Mr. Lips' conjecture, based on a two-day site visit, does not compare to thorough analysis which Alton and the Division undertook as to whether there actually was an aquifer that would be adversely affected. Nonetheless, the "evidence" presented by Mr. Lips, included the following:

> It's reasonable to assume that it is the same geologic formation that was at one time continuous that is likely still more or less continuous up into the permit area. But as I said, there are places where, because of erosion, that there may be isolated portions. So I don't want to – I just want to be very clear here that I wouldn't say that all of these are continuous.

Hrg. Tr. 1397:14-21. So in other words, while Lips may have found some isolated area that supported a spring or seep, he cannot and will not opine that they are part of a continuous formation; hence, he cannot document that there is an aquifer that will be materially affected, let alone affected at all by Alton's mining.

d. Alton's Investigation of the Dakota Formation was Adequate to Confirm that No Aquifer Was Likely to be Adversely Impacted by Mining

i Opinion Testimony of Alton's Expert Hydrologist

Assuming, *arguendo*, that Alton was obliged to investigate the Dakota Formation for existence of an unknown but affected aquifer, the evidence clearly shows that, based on the expert testimony of Erik Petersen, its investigation was sufficient to rule out any need to drill more deeply than the stratum immediately below the coal seam. At hearing, Mr. Petersen described these investigations which form the basis of his expert opinion.

First, Mr. Petersen observed that the Dakota Formation outcrops in and around the permit area, but contains no appreciable seeps or springs other than SP-4, discussed below. Petersen Testimony, Hrg. Tr. 1433:2–6. Second, even though water resources are scarce and highly sought, no producing wells exist in the Dakota Formation in or near the permit area. Hrg. Tr. 1434:3–7. Third, the upper portion of the Dakota Formation in the permit area where effects of mining might be expected contains little permeable sandstone but is primarily impermeable shale or clay. Hrg. Tr. 1431:3–20. Fourth, the Dakota Formation, where it outcrops in stream channels or washes, produces no contribution to stream base flow. Hrg. Tr. 1433:22–1434:2. Fifth, owing to the extensive cover of impermeable Tropic Shale, there is very little potential for recharge of water into the Dakota Formation. Hrg. Tr. 1434:11–1435:13.

Sixth, the Dakota Formation's interbedded nature makes it a poor conductor of water. While substantial beds of sandstone are known to be present in portions of the Dakota Formation in the mine area (Ch 6 and 7 of MRP, Doelling 1972, Tilton 2001, see Ex. D-1 at \Coal_Hollow\MRP\Coal Hollow 025005\Volume 6 and Volume 7.pdf) the lack of water transmitting potential of these sandstones is primarily a function of internal structure of the units – particularly the presence of interbedded thin to thick, low-permeability shales or mudstones that isolate permeable strata from adjacent strata at both the local and regional scale – and not simply the abundance or paucity of sandstone layers or the percentage of the total formation comprised of sandstone. Hrg. Tr. 1434:18–1435:13; Ex. D-8, Final TA at 62 ("The Dakota Formation is not a good aquifer."); see R645-100-200 (defining "aquifer," in terms of ability to store and transmit water for a specific use.)

Mr. Petersen's expert testimony amply demonstrates that Alton was not required to search for an unknown aquifer in the Dakota Formation, and satisfied the rule's requirement by

submitting the required geologic information for the stratum immediately below the coal seam. To the contrary, Mr. Lips' testimony was not based upon any data that had been collected and rested solely upon his conjecture that some remote springs or seeps "could" indicate the presence of an aquifer.

ii Support in the MRP

The basis for Alton's conclusion that no affected aquifer existed below the coal seam was also set forth by the applicant in its permit application, and considered by the Division in its Technical Analysis. See Petersen Testimony, Hrg. Tr. 1444:20–1445:18. Ex. D-8, Final TA at 61-62, 64, 68; Permit App Section 721, Ch 6 and Appx. 7-1 (lithology and stratigraphy of the Tropic and Dakota strata), Appx. 6-4 (bore hole logs indicate strata overlying and immediately underlying the Smirl coal do not possess aquifer characteristics) (Ex. D-1 at \Coal_Hollow\MRP\Coal Hollow 025005\Volume 6 and Volume 7.pdf) The permit application further discusses this rationale in several locations. See Permit App at 7-4, 7-24, 7-26, 7-27, 7-36-37, Appx. 7-1 at 19 (Ex. D-1 at \Coal_Hollow\MRP\Coal Hollow 025005\Volume 7.pdf). The Division also identified these considerations in its Technical Analysis. Ex. D-8, Final TA at 61–62 (October 15, 2009) ("Neither the Division nor the applicant has found evidence of aquifers in the strata beneath the Smirl Coal Seam that may be adversely affected by mining"). This analysis is more than adequate to support the Division's Findings. Further, Mr. Lips testified that he could not dispute the Findings of the Division. Hrg. Tr. 1412:24.

iii Failure by Petitioners to Establish an Affected Aquifer

Petitioners failed to meet their burden of proving that an aquifer exists below the coal seam that may be affected by mining. This burden was not met or documented either in the

administrative record, in comments to the Division or at hearing before the Board. In response to public comments that ACD's bore holes did not extend to the aquifers in the Dakota Formation, the Division responded that "the commenters did not identify aquifers or present evidence of aquifers in the Dakota Formation." Ex. D-8, Final TA at 62. At hearing, Petitioners' witness was unable to confirm whether such an aquifer existed. Lips Testimony, Hrg. Tr. 1411:17–21; 1412:20–24. In fact, Lips went so far as to state that: "I never said there was [an aquifer]. There may be one." Hrg. Tr. 1413:11.

By contrast, at hearing, the Division and ACD's expert hydrologist testified that SP-4, the only water source within the Dakota Formation with a defined use, is not adversely impacted by mining. Petersen Testimony, Hrg. Tr. 1434:18–24, 1435:14–17. Alton's survey identified three springs, located from one-half to three miles south of the permit area, which emerge from the Dakota Formation, but only one of these, SP-4, actually flows and has a specific use associated with it. Abate Testimony, Hrg. Tr. 1281:20–1282:4.

iv **Area Geology**

While the text accompanying the Tilton geologic map observes that sandstone aquifers in the Dakota are possible, and that sandstone generally predominates over impermeable strata, this observation was not borne out by either Mr. Lips' or Mr. Petersen's field observations, and is contradicted by the Doelling geologic map. Lips' Testimony, Hrg. Tr. 1403:4-1405:2; Petersen Testimony; Hrg. Tr. 1452:8–20. Regardless of the percentage of sandstone in the formation, the lack of water transmitting potential in the Dakota Formation is primarily a function of its internal structure—particularly the presence of interbedded thin to thick, low-permeability shales or mudstones that isolate permeable strata from adjacent strata at both the local and regional

scale—and not simply the abundance or paucity of sandstone layers or the percentage of the total formation comprised of sandstone. Petersen Testimony, Hrg. Tr. 1440:18-1441:20. No wells are known to produce water from the Dakota Formation. Ex. D-8, Final TA at 61; Petersen Testimony, Hrg. Tr. 1434:3-7, Permit Application at 7-4 (Ex. D1 at /Coal_Hollow/MRP/Coal Hollow 025005/Volume 7.pdf). The essence of the dispute over the Tilton and Doelling sources is which of the two *generalized* descriptions of the Dakota Formation is more *specific* and therefore more reliable. Alton suggests that the better yardstick for evaluating their usefulness in the present matter is which is more consistent with observed conditions. In that respect, the Doelling source deserves greater weight.

Alton further notes that the deposition testimony, although admitted, contains numerous evidentiary objections, including objections to exhibits, upon which the Board has not ruled. Alton renews those objections and suggests that, to the extent that the Board relies upon any of the objectionable testimony, it must also rule on the objection. On the other hand, if the Board chooses not to rely on that material, no ruling is necessary.

v No Relationship Between Spaniard Spring and Coal Hollow Mining Activities

While the Division in a 1988 initial completeness review of a prior application stated that the existence of "Spaniard Spring" may support the inference that the first aquifer below the coal seam is in the Dakota Formation, this is not supported by the evidence. See Lips Testimony, Hrg. Tr. 1386:15–1388:20. Mr. Petersen testified that any relationship between this spring and the permit area is extremely unlikely. Spaniard Spring is located on an upland plateau that is some 3 miles southeast of the permit area and is physically isolated from the mine area by an erosional escarpment. Hrg. Tr. 1415:5–16. Based on Ex. P-40 (Petitioners' geologic map), the spring apparently discharges near the upper contact of the Dakota Formation with the Tropic

Shale, not within the formation where it would be stratigraphically below the coal seam. Petersen Testimony, Hrg. Tr. 1443:17–1444:12. Finally, Mr. Lips' observation of a small seep emerging into Lower Robinson Creek at the base of the coal seam, above the clays of the Dakota Formation, also fails to prove the existence of an aquifer, because this water is apparently transmitted through the alluvium or coal seam, not below it, and has no specific use. Lips' Testimony, Hrg. Tr. 1376:9-21; cp. Permit App at Table 7-12 (showing no state appropriated water right for Spaniard Spring) (Ex. D-1 at \Coal_Hollow\MRP\Coal Hollow 025005\Volume 7.pdf); Petersen Testimony, Hrg. Tr. 1198:18-1199:2.

vi Navajo Sandstone is the First Significant Aquifer Below the Smirl Coal Seam

The Division specifically addressed the comments of the Petitioners regarding the location of the first significant aquifer below the Smirl Coal seam in its Final TA. In response to a comment that there was no description of the geology of the aquifer below the lowest coal seam to be used, the Division identified the Navajo Sandstone as the first water bearing strata below the Smirl Coal seam. Exhibit D-8, Final TA at 62. The Division found that the Navajo Sandstone does not crop out in the permit and adjacent area, is effectively isolated from the proposed mining by more than 1,000 feet of low-permeability shales and siltstone of the Dakota and Carmel Formations, citing MRP Sections 621, 624.100 and 728.310. *Id.*; see Permit App at 6-1 to 6-7, 6-10 to 6-17, 7-24 to 7-34 (Ex. D-1 at \Coal_Hollow\MRP\Coal Hollow 025005\Volume 6.pdf and Volume 7.pdf). Petitioners failed to demonstrate at hearing that this conclusion was incorrect.

vii Deposition Testimony

The Board should assign little weight to the deposition testimony offered into evidence by Petitioners as it relates to the question of whether an aquifer, likely to be adversely affected by mining, exists below the Smirl Coal seam. The reason for assigning lesser weight is that the testimony of Mr. Smith consists of brief responses to conclusory statements posed as questions by Petitioners' counsel and contains little explanation or detail. Equally important, the deposition focused almost entirely on the same information and documents introduced and testified to at the hearing, where greater detail, explanation and cross-examination was available. While Alton holds Mr. Smith in high regard as a hydrologist, and recognizes his important role in the Division's decision, his deposition testimony lacks significant insight or detail that would justify assigning it equivalent weight to the live hearing testimony. Alton objected to the use of the portions of the Smith deposition due to the inherent problems associated with using a discovery deposition in lieu of live testimony.[7]

Further, the deposition testimony of Mr. Smith contains little information relevant to any fact that is in dispute regarding the Dakota Formation. The facts surrounding the existence or absence of an aquifer in the Dakota Formation likely to be affected by mining are not disputed. Detailed testimony provided at hearing is consistent with the brief deposition testimony of Mr. Smith in response to Petitioner's broadly-framed questions. 30(b) (6) Deposition of the Division of Oil, Gas and Mining, Vol. 1, pp. 96–128 (admitted over Alton's objections as Ex. P-38) (hereinafter "**Smith Dep.**").

[7] Alton further notes that the deposition testimony, although admitted by the Board into the record, contains numerous evidentiary objections, including objections to exhibits, upon which the Board has not ruled. Alton renews those objections and suggests that, to the extent that the Board relies upon any of the objectionable testimony, it must also rule on the objection. On the other hand, if the Board chooses not to

Specifically, all parties agree that three springs appear to emanate from the Dakota Formation at some distance south of the proposed mine. Abate Testimony, Hrg. Tr. 1280:9–17; Lips Testimony, Hrg. Tr. 1362:13–15; Petersen Testimony, Hrg. Tr. 1434:7–21; Smith Dep. 96:23–97:3. There is no dispute that only the most southerly of these, designated SP-4, has a discharge sufficient to support a designated use. Abate Testimony, Hrg. Tr. 1280:18–1281:6; Lips Testimony, Hrg. Tr. 1362:22–1364:15; Permit App at Appx 7-1, Table 1 (Ex. D-1 at \Coal_Hollow\MRP\Coal Hollow 025005\Volume 7.pdf); Smith Dep. 99:12–16. Therefore, it is reasonable to conclude that an aquifer exists *at that location* because the spring evidences a zone or stratum capable of storing water in quantities sufficient to support a specific use. See R645-100-200 (defining "aquifer"). On that basis, Mr. Smith agreed in his deposition that an "aquifer" existed in the Dakota Formation. Smith Dep. 98:16–19, 99:12–20. All parties also concede that the 2001 Tilton geologic map generally describes a two-to-one ratio of sandstone to silt/clay layers in the Dakota Formation, although there is disagreement about its applicability. Abate Testimony, Hrg. Tr. 1294:20–1296:22; Lips Testimony, Hrg. Tr. 1381:13–1386:3; Petersen Testimony, Hrg. Tr. 1440:10–1441:4; Smith Dep. 107:23–109:7.

The remaining dispute involves two related questions. The first is whether the information identified above necessarily led to the inference that the aquifer associated with SP-4 extends to a location under or near the mining operations. The second is whether, if such an aquifer extends to that location, should Alton and the Division have concluded that it is likely to be adversely affected by those operations. These questions are dispositive because, if no aquifer exists below the coal seam that is likely to be affected, the rules are entirely satisfied by providing information, as Alton did, on the stratum immediately beneath it.

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rely on that material, no ruling is necessary.

No witness was willing to conclude, based on the information above, that an aquifer exists below the coal seam that is likely to be affected by the proposed mining operations. On that basis alone, the Division's Findings and permit approval decision should be affirmed, because Petitioners have failed to prove that the applicable rule has been violated. Mr. Lips repeatedly stated that he would not say that an aquifer existed, only that Alton had failed to rule out its existence. Hrg. Tr. 1412:5-7, 1413:11, 1413:15-23. Even after visiting the site, Mr. Lips did not present evidence to dispute Mr. Petersen's field observations regarding the predominance of silt or clay outcroppings in the Dakota Formation, the lack of contribution to stream baseflow, or the lack of water-producing wells. Mr. Lips did not testify to any field observation corroborating his reliance on the Tilton report and also declined to take issue with Mr. Doelling's characterization of 60-75 percent non-water-transmitting layers in the Dakota. Hrg. Tr. 1404:15–25.

Mr. Smith's testimony agreed with that of Ms. Abate and Mr. Petersen that the location of SP-4 makes it unlikely that it is associated with any water resource that is likely to be adversely affected. Mr. Smith indicated that SP-4 emerges near the bottom of the Dakota Formation, while mining operations occur at the top, a point corroborated by Mr. Petersen at the hearing. Smith Dep. 117:1–13. Mr. Smith agreed with Ms. Abate and Mr. Petersen regarding the lenticular nature of the more-porous sandstone strata in the Dakota, making the existence of an aquifer spanning that distance unlikely. Hrg. Tr. 112:24–25. Finally, like Ms. Abate and Mr. Petersen, Mr. Smith found the Doelling source more reliable than Tilton on the question of the water-storing and water-transmitting capabilities of the Dakota Formation *at that location.* Smith Dep. 114:3–115:4.

Extensive testimony at the hearing addressed the question of whether an aquifer existed in the Dakota Formation that might be affected by the Coal Hollow Mine. In contrast, Mr. Smith's deposition testimony on this subject consists of a single question, asked in the broader context of the Tilton report, and Mr. Smith's somewhat hesitant answer. Smith Dep. 109:8–12. Neither the question nor Mr. Smith's answer was specific either to the aquifer associated with SP-4 or to the Coal Hollow Mine. Later in his deposition, when asked about the possibility that water from the Coal Hollow mining operations might enter a Dakota Formation aquifer through fractures in the upper Dakota Formation just beneath the coal, Mr. Smith unequivocally declined to agree that this was likely to occur, and explained his reasons:

> MR. MORRIS: Does the division agree that to the extent that the Dakota Formation is fractured, ACD's operations will likely transmit water through those fractures? Or cause water to transmit?
>
> MR. SMITH: No.
>
> MR. MORRIS: You don't agree to that?
>
> Mr. Smith: That is not a valid conclusion. That is not a certain conclusion.
>
> MR. MORRIS: Is it possible?
>
> MR. SMITH: It is possible.
>
> MR. MORRIS: What degree of likelihood would the division recognize with respect to the transmission of water through these fractures?
>
> MR. SMITH: Lower.
>
> MR. MORRIS: And why is that?
>
> MR. SMITH: Because there are bentonite clays in the Dakota. If – we know of no real history of it being fractured except for the fault, and there are clay stones, there are fine grain deposits. The deposits in the Dakota, to my knowledge, are lenticular in nature. They are not broad or continuous.

The testimony of Ms. Abate and Mr. Petersen corroborated that conclusion, and Petitioners offered no contradictory evidence. Abate Testimony, Hrg. Tr. 1278:9–16; Petersen Testimony, Hrg. Tr. 1435:25–1436:13.

Declining to directly shoulder their burden of proof, Petitioners' argue that the Division should have required Alton to continue its drilling into the Dakota Formation until it encountered the aquifer supplying SP-4, or confirmed that it did not exist in a location where effects were likely. Hrg. Tr. 1309:7–21. This is a question of professional and technical judgment by the Division, and Petitioners have failed in their burden to prove that the Division's judgment was clearly erroneous or unreasonable. To the contrary, the evidence adduced both in deposition testimony and at hearing shows that this decision had a sound scientific basis. Alton believes that Mr. Smith's deposition testimony, taken as a whole and in context with the hearing testimony, fails to prove arbitrary and capricious action by the Division. In his deposition, Mr. Smith responded candidly with conclusions drawn from the limited subset of the facts that Petitioners questioned him about. His testimony that one fact or another might lead to a certain conclusion, does not prove the same conclusion was necessary in light of all the facts, nor does it impeach the much more detailed hearing testimony of either Ms. Abate or Mr. Petersen. Because Petitioners have failed to prove that the Division's decision to accept data from the stratum immediately below the coal seam in satisfaction of the rule was arbitrary, capricious, or clearly erroneous, the Division's Findings and permit approval decision should be affirmed on this point.

Fundamentally, the Division relied upon the MRP and all information provided by Alton, as well as its own expertise and the vast body of knowledge available about the Dakota Formation to arrive at its conclusions. The evidence on which the Division relied was more than

adequate to convince a reasonable mind to support its Findings. The Petitioners failed to meet their burden of proof to overturn the Division's Findings and the Board is compelled to uphold the Division's decision to approve the Coal Hollow Mine Permit.

6. This section of Alton's brief addresses Petitioners' issues 15 and 16 together in the analysis set forth below.

Petitioners' Issue 15: Whether ACD's hydrologic monitoring plans are unlawfully incomplete because they fail to establish monitoring stations:

(a) for surface water on Lower Robinson Creek immediately upgradient of the permit area; and

(b) for both surface and alluvial ground water in or adjacent to Lower Robinson Creek, immediately downgradient of the most downgradient discharge point from the seeps or springs that ACD and the Division have observed between monitoring points SW-101 and SW-5.

DIVISION'S FINDING: The Hydrologic Resources information in the permit application, including monitoring plans, was adequate under the applicable rules and statutes subject to resolution of certain clear and concise housekeeping or clerical issues. Ex. D-8, Final TA 76–77 (October 19, 2009).

LEGAL STANDARD: The rules for hydrologic monitoring plans require surface and groundwater monitoring locations to be identified in the permit application, but provide no specific criteria for choosing the locations. See R645-301-731-211 (groundwater); 645-301-731.222 (surface water). Surface-water hydrologic monitoring plans are to be based on the probable hydrologic consequences determination and the baseline monitoring data. R645-301-731.221.

(See Issue 15 and Issue 16—Permittee's Argument Below)

7. Petitioners' Issue 16: Whether ACD's baseline hydrologic data are unlawfully incomplete in one or more of the following respects:

(a) the data do not include even one flow rate or water quality entry during the data collection period at monitoring stations that ACD should have established on Lower Robinson Creek immediately upgradient of the permit area, and thus the data do not demonstrate seasonal variation at that location;

(b) the data do not include even one flow rate or water quality entry during the data collection period at a monitoring station that ACD should have established on Lower Robinson Creek immediately downgradient of the most downgradient discharge point from seeps and springs that ACD and the Division have observed between monitoring points SW-101 and SW-5, and thus the data do not demonstrate seasonal variation at that location; and

(c) none of the water quality data are verified by complete laboratory reports that establish an appropriate chain of custody and identify the sampling protocols that governed collection of each water sample.[8]

DIVISION'S FINDING: The Hydrologic Resources information in the permit application, including monitoring plans, was adequate under the applicable rules and statutes subject to resolution of certain clear and concise housekeeping or clerical issues. Ex. D-8, Final TA 76–77 (October 19, 2009).

LEGAL STANDARD: A permit application must contain a "determination of the quantity and quality of water in surface and groundwater systems, including the dissolved and suspended solids under seasonal flow conditions." Utah Code § 40-10-10(2)(c)(i)(B). The rules for collection of baseline hydrologic data for surface water require specific quantity measurements and chemical analyses, in an amount sufficient to demonstrate "seasonal variation." R645-301-724.200. The rule for baseline groundwater information is similar, requiring collection of information on "seasonal quality and quantity." R645-301-724.100. Neither rule provides specific criteria for choosing the locations where the baseline data will be collected.

ARGUMENT IN SUPPORT OF THE DIVISION'S FINDINGS RE: ISSUES 15 AND 16 AND PERMIT APPROVAL

At the hearing, Petitioners had the burden of proving that the baseline data collected on Lower Robinson Creek is insufficient to allow description of seasonal variation in water quality or quantity. Rather than doing so, Petitioners withdrew that contention, set forth in their statement of the issues above, conceded the adequacy of Permittee's data and there is

[8] Petitioners have declined to pursue Issue 16(c) dealing with sampling and analytical methods and presented no evidence on that subject at the hearing. Hrg. Tr. 1089:13-25.

consequently no dispute over whether the monitoring data are sufficient to demonstrate seasonal variability. Hrg. Tr. 1213:19-1214:10.

Petitioners instead relied on the testimony of Elliott Lips, who opined that the necessity of locating monitoring stations at the permit boundaries was implicit in another rule not identified in Petitioners' issues 15 or 16. Lips Testimony, Hrg. Tr. 1093:15–1094:16. Mr. Lips identified R645-301-731 as the source of a requirement that he believes requires monitoring points on a surface water resource (such as a stream) to be located where the stream crosses permit boundaries in order to differentiate possible adverse hydrological effects occurring inside or outside the permit area. *Id.* He did not indicate why this rule pertaining to Alton's plan for mining and reclamation operations was pertinent to the adequacy of pre-mining baseline hydrologic information and on cross-examination could not point to any specific language in the rule that would require this interpretation.[9] Hrg. Tr. 1161:18-1163:20.

Not only could Mr. Lips not refer to any regulation or rule to support his interpretation, he was unable to testify (1) that this was an industry standard, or (2) that it had ever been achieved elsewhere. In fact, Mr. Lips was not even qualified to discuss this topic in that he had never set up a monitoring system for a surface coal mining permit as he described was necessary for Alton.

> MR. BAYER: Have you ever done a surface mining permit application?

[9] Lips' opinion that the Coal Rules' performance standard (requiring discharges from the mine to comply with state or federal water quality standards) mandates establishing monitoring points where Lower Robinson Creek crosses the permit boundaries does not present a reason to deny the permit application. The applicable standard regulates *discharges*, which are defined in Utah's Water Quality Act as "the addition of any pollutant to any waters of the state." Utah Code § 19-5-102(3). The mere passage of the creek across the permit boundary is not a "discharge" within this definition. Potential, but unlikely, discharges from the mine's containment structures are regulated through the UPDES permit issued to the mine, and therefore comply with the applicable water quality standards. See Smith Testimony, Hrg. Tr. 1070:14–18; UPDES Permit at Ex. D-25.

MR. LIPS. Yes, I have. I'm sorry, I apologize. They were underground mines.

MR. BAYER: That's what I thought. I want to be very careful about that.

MR. LIPS: It was under the same Utah rules.

MR. BAYER: Okay. At the permit boundary, where did you put your water monitoring point?

MR. LIPS: For these underground mines?

MR. BAYER: Ummm-hmmm.

MR. LIPS: I don't recall.

MR. BAYER: You don't know if they were right there at the boundary, do you?

MR. LIPS. As I sit here right now, I can't really answer that.

MR. BAYER: So as you are now sitting here today as an expert, you cannot look at this Board and say you have ever created a plan that put a water monitoring point right at a permit boundary, can you?

MR. LIPS: The best recollection I would have is that that would have been the recommendation that I would have made to my supervisors and then to the mining operator.

MR. BAYER: My question is: Sitting here today, you cannot look at the Board and say that you have ever designed a mine in which you designated for that permit application a monitoring point that was right on the permit boundary, have you?

MR. LIPS. As I sit here right now, I can't recall of one where that's the case.

Hrg. Tr. 1163:21-1165:1.

Not only can Mr. Lips not provide any basis for this personal "opinion," but his logic is faulty for two reasons. First, the relevant standard for the operations plan compels the mine to identify "steps to be taken during coal mining and reclamation operations through bond release

to minimize disturbance to the hydrologic balance within the permit and adjacent areas, [and] to prevent material damage outside the permit area." R645-301-731. While location of monitoring points may facilitate detection of either "disturbance" or "material damage" to the hydrologic balance, monitoring is not an active "step to be taken" to minimize disturbance or prevent damage, but exactly what the name implies—passive monitoring of the resource. In this regard, the mine operations plan discussed in subsection 731 has a purpose parallel to the CHIA. While the CHIA evaluates how the mine is to be *designed* to prevent hydrologic damage, the operations plan describes how the mine will be *operated* to prevent damage. Neither the CHIA nor the operations plan is intended for use as an enforcement tool.

Second, because there is no need in monitoring to differentiate adverse effects occurring in reaches of Lower Robinson Creek located either on or off the permit, the regulation cannot be fairly interpreted to mandate a specific location of monitoring points specifically to isolate these effects. Hydrologic balance is defined as "the relationship between the quality and quantity of water inflow to, outflow from, and water storage *in a hydrologic unit* such as a drainage basin, aquifer, soil zone, lake, or reservoir." R645-100-200 (emphasis supplied), and the focus of monitoring, therefore, is to identify changes that occur in the hydrologic unit (in this case, Lower Robinson Creek). An adverse effect anywhere within the hydrologic unit to the relationship among inflow, outflow, and storage is an effect on the hydrologic balance, regardless of its proximity to the permit area. Therefore, it makes little sense to attempt to isolate a disturbance to the hydrologic balance to a narrowly defined portion of the stream, because hydrologic balance, by definition, is evaluated as a single hydrologic unit. So long as Alton adequately monitors Lower Robinson Creek as a unit, or system, there is no need to isolate the actual permit boundary as the appropriate monitoring point in the monitoring plan in order to attempt to detect

disturbances to the hydrologic balance. Mr. Lips' argument that the rules mandate that isolation must fail, first because the regulations do not require this approach (Lips could not point to any interpretation consistent with this approach) and second, because that would not treat Lower Robinson Creek as a hydrologic unit.

Mr. Lips' opinion that the monitoring plans were insufficient to detect material damage is directly contradicted by Mr. Petersen, an expert hydrologist and the author of Alton's plans. Mr. Petersen testified that the absence of monitoring stations located at the exact spot of the upstream permit boundary and at the downstream extent of the bank seepage did not compromise Alton's ability to describe seasonal variation or detect material damage to the hydrologic balance. Hrg. Tr. 1216:14-1218:5. The risk of bias or distortion based on the location of the downstream stations is low, and the likelihood of gaining greater insight from stations at the boundaries is minimal. Hrg. Tr. 1218:6-20; 1219:3-24. Mr. Petersen's extensive experience over five years of observations and data collection activities at and data collected at the mine site renders his opinion on the subject more persuasive than Mr. Lips, who spent one day examining Lower Robinson Creek, took no samples, and made only crude flow measurements by floating sticks in the creek. Hrg. Tr. 1169:8–1172:7.

As a factual matter, each of the alleged deficiencies in the monitoring plan arising from location of monitoring stations was refuted by the testimony of Mr. Petersen. First, Petersen testified that Lower Robinson Creek has been and will be monitored at four locations: SW-4, in the upstream reach above the permit area, SW-101, inside the permit area at the county road crossing, BLM-1, along the edge of the permit area near where bank seepage is observed, and SW-5, downstream of the permit area near the Kanab Creek confluence. Hrg. Tr. 1200:24-

1205:11. In addition, groundwater monitoring sites along Lower Robinson Creek document the interaction of groundwater with the Creek at locations UR-70, Y-99, and LR-45. *Id.*

With respect to the allegedly omitted upstream monitoring station, his testimony showed that locating the upstream monitoring point at SW-4, some distance upstream of the permit boundary, was unlikely to miss any important data because the Lower Robinson Creek is ephemeral in that reach, a dry wash except for the very brief snowmelt runoff. Hrg. Tr. 1210:3-22, 1235:13-16, 1237:2-1238:9. In most sampling events both SW-4 at the upstream location and SW-101 within the permit boundary are dry. Hrg. Tr. 1265:16-19.

As to the downstream location, the "area of bank seepage" or seeps and springs alleged by Mr. Lips to be unmonitored are in fact monitored on the surface at BLM-1, and in the subsurface at LR-45. Hrg. Tr. 1199:10-1200:23, 1214:25-1215:7. Besides demonstrating intimate familiarity with the irrigation diversions and storage in the bottom reach of Lower Robinson Creek, Mr. Petersen's testimony showed conclusively that the high flows crudely estimated by Mr. Lips at SW-5 were not only anomalous, but unique. Hrg. Tr. 1194:22-1196:1, 1245:7-23, 1246:2-19. His testimony showed that his brief investigation in the course of regular monitoring was readily able to account for the anomaly, which resulted from irrigation diversions well off the permit area. Hrg. Tr. 1194:25-1197:19. Those diversions are accounted for in the baseline data through monitoring at the Lamb Canal surface water monitoring point. Permit App Dwg. 7-10 (Ex. D-1 at \Coal_Hollow\MRP\Coal Hollow 025005\DWG. 7-10.pdf).

Mr. Lips' "scientific" analysis is unprofessional and carries little weight compared to the years of baseline data, laboratory analysis and observations conducted by Alton and the Division. By his own description, Mr. Lips refers to a method by which he used sticks floating on the surface of the water to determine a flow rate. Nor can Petitioners arbitrarily cite for support to

another source of data collection at times, by methods, and in locations that might have produced a different, or even more detailed, description of the resource. Mr. Lips' "analysis" is untested by any outside source, is based on no water samples and includes only crude rudimentary flow measurements which fail to refute the years of background data collected by Alton and is disingenuous at best.

When asked about the background data, Mr. Lips was clear:

> MR. BAYER: So right off the bat, let's get this clear. You cannot dispute any of the baseline data information that's in the permit application package based upon your own independent testing, can you?
>
> MR. LIPS. Can you be specific to which baseline data?
>
> MR. BAYER: Anything that talks about TDS, you have no independent data on that, do you?
>
> MR. LIPS: That's correct.
>
> MR. BAYER: As far as flow – with the exception of the one item that we'll come back to in a second. With regard [to] flow or at any point in time during the course of a season, whether there is or is not flow, you don't have any independent data to dispute anything that's in the permit application package?
>
> MR. LIPS: For the monitoring stations where there has been monitoring and report, I do not dispute those data.

Hrg. Tr. 1160:25-1161:17.

Not only must Petitioners have a basis to dispute Alton's background data, but they must also prove that Alton's methods fell short of the legal standard identified above. There is no accepted interpretation of Lips' reading of the regulations and he cannot dispute any of the background data submitted by Alton and relied upon by the Division. The Division's Findings on issues 15 and 16 should be affirmed by the Board.

8. Petitioners' Issue 17: Whether the Division's determination that Sink Valley does not contain an alluvial valley floor is arbitrary, capricious, or otherwise inconsistent with applicable law.

DIVISION'S FINDING: The "definition that defines an alluvial valley floor in Sink Valley is not met." Ex. D-8, Final Technical Analysis 31 (October 19, 2009). The "defining geologic characteristics are not present for an alluvial valley floor within or adjacent to the permit area." Id. at 51. The Division concurred with Alton that Sink Valley in the area of the mine consists of uplands located outside the floodplain and terrace complex, finding, "The Upper Sink Valley Wash, where the mine is proposed, consists of alluvial fan deposits, with no floodplain and terrace complex." Id. at 51.

ARGUMENT IN SUPPORT OF DIVISION'S AVF DETERMINATION AND PERMIT APPROVAL

The Division's determination that no alluvial valley floor ("**AVF**") exists in Sink Valley is based upon a correct application of the UCMRA and this Board's rules, and represents a reasonable and rational application of its technical judgment that the Board should respect. If mining is proposed "within a valley holding a stream or in a location where the adjacent area includes any stream" the applicant must provide information, including a field investigation, from which the Division can determine the existence of an AVF. R645-302-321.100.

Information to be gathered includes, *inter alia*, "topography of terraces, flood plains and channels . . . ." R645-302-321.210. "Alluvial valley floor" is defined in identical language in SMCRA, UCMRA, and the Board's rules:

> "Alluvial valley floors" means the unconsolidated stream-laid deposits holding streams with water availability sufficient for subirrigation or flood irrigation agricultural activities, but does not include upland areas which are generally overlain by a thin veneer of colluvial deposits composed chiefly of debris from sheet erosion, deposits formed by unconcentrated runoff or slope wash, together with talus, or other mass-movement accumulations, and windblown deposits.

30 U.S.C. § 1291(1) (2006); Utah Code § 40-10-3(2); Utah Admin. Code R645-100-200. Upland areas, which by definition cannot be alluvial valley floors, are defined by the Utah rules as follows:

> "Upland areas" means, with respect to ALLUVIAL VALLEY FLOORS, those geomorphic features located outside the floodplain and terrace complex such as isolated higher terraces, alluvial fans, pediment surfaces, landslide deposits, and surfaces covered with residuum, mud flows, or debris flows, as well as highland areas underlain by bedrock and covered by residual weathered material or debris deposited by sheetwash, rillwash, or windblown material.

R645-100-200. The federal rules contain the identical definition. See 30 C.F.R. § 701.5 (2009).

If the initial characteristics of an AVF are found, then "upon reviewing this information, the Division shall find that an AVF is present if the alluvial valley floor consists of unconsolidated stream-laid deposits and sufficient water is present from the stream to support agriculture." R645-302-321.300-321.323. However, the dispute centers on the legal question of whether the Division must make its AVF determination solely on the mandate of R645-302-321.300–321.323, as Sierra Club seems to suggest is required, and must therefore disregard the Coal Program's definitions of "alluvial valley floor" and "upland area" at R645-100-200. To determine the correct application of the rules, Alton and the Division maintain that these definitions must be fully considered.

On this question, Sierra Club's position runs counter to the well-settled canon of statutory interpretation that a law must be construed, if possible, to give effect to all of its provisions, and interpretations that render portions of the law superfluous or meaningless must be avoided. See County Bd. of Equal. of Salt Lake County v. State Tax Comm'n, 929 P.2d 176, 179 (Utah 1996); Hall v. Bd. of Corrections, 24 P.3d 958, 963–64 (Utah 2001). The definition scheme of the regulations is the foundation for the correct application of all of the rules and regulations. While the Petitioners want to pick and choose which parts of the regulations they deem suitable for their challenge, they cannot challenge the Division's determination without a correct application of the law.

By failing to consider the definition of the term "alluvial valley floor," Petitioners fail to give proper consideration to the statutory and regulation definition of an AVF. By disregarding the regulatory definition of an AVF, and the regulatory definition of "upland area" cross-referenced in that definition of AVF, the Sierra Club's position leads to absurd and inconsistent results.

Utah's Coal Program rules, like the federal rules, are structured to allow an applicant contemplating mining to request the Division to make the AVF determination in advance of the permit application. This initial determination provides the would-be applicant with a degree of up-front certainty regarding the permit review process. Determination of whether or not an AVF exists requires consideration of the existence of floodplains and terraces. However, the Division, in Sierra Club's view, should thereafter ignore any of that required information beyond what might be necessary to determine the presence of "[u]nconsolidated stream-laid deposits holding streams. . . ." This truncated analysis ignores key definitions which the above-cited canon of statutory construction exists to prevent. By contrast, the Division has correctly applied the definitions of "alluvial valley floor" and "upland area" in making its AVF determination.

Petitioners failed to prove that Sink Valley contained an AVF. For evidence supporting their claim, Petitioners presented only the testimony of Elliott Lips, who opined that some southern portion of Sink Valley adjacent to the permit area was an AVF. Alton strongly objected to the competency of Mr. Lips to testify on this subject.

Upon questioning, Mr. Lips provided the following insight into his lack of experience in AVF analysis:

> MR. BAYER: Mr. Lips, during your professional career, have you ever assisted a coal mine permittee regarding analysis specifically of AVF issues?

MR. LIPS: The context in which that would have come up is for all of the permitting that I did for—all of the consulting that I did for permittees—always involves looking at whether or not the AVF issue needs to be investigated further. In the coal projects that I have worked on in the past, it was quickly determined that they weren't an issue and that additional investigations, AVF investigations were not required.

MR. BAYER: The point I'm making is: Have you ever had to go through, for a permittee, a complete AVF analysis that would be presented for a determination?

MR. LIPS: No.

MR. BAYER: In the course of acting as a consultant for any group, have you ever gone through a previously AVF determination challenge?

MR. LIPS: No.

MR. BAYER: During the course of your entire career, have you ever given expert testimony on the issue of whether or not an area is or is not an AVF?

MR. LIPS: No.

Hrg. Tr. 894:15–895:12.

The opinions suggested by Lips could have been made by any lay person who desired to "opine" on the AVF topic. The Board allowed Mr. Lips to testify but should give little weight to his testimony. Not only was Mr. Lips brought in to testify as an "expert" on a topic he had no experience with, he had never previously given testimony regarding the subject. Therefore, the Petitioners brought no credible evidence before the Board to dispute the Division's AVF determination.

The Board should assign very little weight to Mr. Lips' opinion regarding the existence of an AVF because it rests on inadequate legal, factual, and scientific bases. His opinion is legally deficient because he testified that it was based on analysis that excluded the definitions of "alluvial valley floor" and "upland area" set forth in the Board's rules. Hrg. Tr. 1011:11–18.

His opinion is factually and scientifically deficient because it purports to identify an AVF but fails to distinguish between "uplands" and "valley floors." Mr. Lips testified that he did not observe any landform in Sink Valley that he would map as either a floodplain or a terrace, Hrg. Tr. 1006:7– 12, and relied upon sources of information identifying alluvial deposits that do not distinguish between valley floors and upland areas such as alluvial fans. Hrg. Tr. 1001:7–1002:2.

Not only is Mr.Lips' testimony contrary to authoritative technical guidance that not every valley filled with alluvium should be identified as an AVF, but only those landforms within topographic valleys containing streams that are floodplains, terraces, or adjacent side slopes that are adjacent to floodplain or terrace landforms and are underlain by alluvium will by definition be an AVF. See Office of Surface Mining, Alluvial Valley Floor Identification and Study Guidelines II-5, 11 (Aug. 1983) (Ex. D29). Further, Mr. Lips fails to account for the sloping surface of Sink Valley, which is inconsistent with existence of a valley floor containing a floodplain. Hrg. Tr. 981:18–989:19;1004:14–1005:4.

Both Alton and the Division presented expert testimony confirming that the area in question consisted entirely of upland areas excluded by definition from designation as an AVF. Testimony of Jim Smith, Hrg. Tr. 862:19–864:5; testimony of Erik Petersen, Hrg. Tr. 1023:20–1024:6. These two witnesses were recognized as experts by the Petitioners and the Board and each had experience in the determination of an AVF and the application of the Utah rules and regulations.

In contrast to the unsupported assertions of Mr. Lips, the Division's own Jim Smith detailed the careful analysis used by the Division to arrive at its conclusions that there was no AVF. Testimony of Jim Smith, Hrg. Tr. 844:14–845:10.

Mr. Lips was unable to offer any adequate scientific basis for his disagreement with the expert judgment of Messrs. Smith and Petersen that the geomorphology of Sink Valley is best described as an alluvial fan or fans, which are "uplands" by definition and can never be considered to be AVFs. Hrg. Tr. 997:18–999:5.

Mr. Lips testified that the basis for his disagreement was that the analysis of surface profiles of a feature, either lateral or longitudinal, were alone insufficient to establish existence of an alluvial fan. Id. Mr. Smith, however, testified that his determination was based far more broadly than these two factors, and included configuration, topography, location of the canyon mouth, absence of a stream channel, soils data, and borehole information. Hrg. Tr. 875:7–876:22. Among other reasons, Mr. Lips' opinion is of limited value because it does not address the conclusions drawn collectively from this broad range of information.

To overcome the findings of the Division, the Petitioners must show that the Division acted arbitrarily and capriciously. To the contrary, the evidence shows that the Division considered all of the relevant factors for an AVF determination even though it could have terminated the inquiry upon finding that the geologic criteria were unmet. Burton Testimony, Hrg. Tr. 801:2–803:9. The Division requested, and received, a specific AVF report and field investigation from the applicant, and considered that information. Permit App. at Appx 7-7 (Ex. D-1 at \Coal_Hollow\MRP\Coal Hollow 025005\Volume 8.pdf). It consulted with staff at the OSM. 795:2–21; 814:1–25. It made a detailed review of the prior AVF determinations affecting a larger permit in the same area, Burton Testimony, Hrg. Tr. 788:18–794:22; Smith Testimony, Hrg. Tr. 837:10–23; 866:17–22, and the technical team conducted a physical inspection of the site. Burton Testimony, Hrg. Tr. 806:23–807:1; Smith Testimony, Hrg. Tr. 865:16–17; Petersen Testimony, Hrg. Tr. 1031:9–11.

The Division's AVF determination was a team effort over several years and required resolving diverging views among the technical staff. Burton Testimony, 805:18–806:14; Smith Testimony, Hrg. Tr. 864:18–865:6. Ultimately, the Division reached a finding that no AVF was present in Sink Valley, and provided a detailed explanation of its reasons covering more than 20 pages in the final Technical Analysis. Final Technical Analysis 31–52 (Oct. 15, 2009) (Ex. D8). The overwhelming weight of the evidence is that the Division engaged in a deliberative, careful review of all available information, and reached a well-reasoned, rational decision.

Contrary to the deliberate, thorough and methodical AVF determination by the Division, Mr. Lips' approach was simplistic. He ignored the required interplay of the definition of "alluvial valley floor" and "upland areas" and instead decided that the sole analysis was:

> And again going back to the rules, the Utah rules, that just say, "unconsolidated stream-laid deposits holding streams." And the inclusion of terraces as a necessary condition is not part of what the AVF definition states.

Hrg. Tr. 902:12–16.

While Alton may disagree with some of the Division's findings, such as whether streams in the area can support agriculture, Mr. Lips was unable to disagree with the conclusion that "at the present time these channels are discontinuous. Sink Valley Wash is discontinuous, meaning that, again, as mapped by Erik Petersen, there are portions of Sink Valley Wash that the channel is small or difficult to identify." Hrg. Tr. 933:15–19. Notwithstanding the foregoing, Lips continued to avoid looking at the "upland area" definition.

> MR. BAYER: In regards to the entire ACD area, you are telling the Board, then, that just because you find unconsolidated stream-laid deposits holding streams that you have determined it is an AVF?
>
> MR. LIPS: That's not what I said.
>
> MR. BAYER: What is it, then, you are saying?

> MR. LIPS: That it is my opinion that the presence of unconsolidated stream-laid deposits holding streams in Sink Valley in the permitted adjacent area in conjunction with the decision that – the finding that the Division has already reached, that the second component of the AVF criteria is satisfied, is the basis for the determination that those areas are alluvial valley floors.
>
> MR. BAYER: In other words, that, joined with the fact that there is agriculture in the area, that's all you need to determine there is an AVFR?
>
> MR. LIPS: I'm not sure what you mean by "all you need."
>
> MR. BAYER: In other words, because the Division made the decision that there is supported agriculture in the area, once you came to the decision that there was those deposits, that was it, and that was the end of your discussion.
>
> MR. LIPS: I believe what my opinion—as I stated it—was that in reference to the two criteria that are necessary in the R645-302 rules, the presence of unconsolidated stream-laid deposits holding streams and the agricultural component, those two components are satisfied.
>
> MR. BAYER: And once you satisfy those two components, then it's an AVF?
>
> MR. LIPS. Yes. Well, then the Division would find that it's an AVF. I'm not the one making the finding.

Hrg. Tr. 1011:5–1012:14.

The sum and substance of Mr. Lips' testimony would require that any area in the State of Utah that contains unconsolidated stream-laid deposits holding streams which support agriculture would be an AVF. This absurd result would find most of Utah as an AVF. Mr. Lips has failed to include the definition of "alluvial valley floors" which specifically excludes "upland areas" such as those in and adjacent to the Coal Hollow Mine. The AVF determination must be reached based on applicable guidelines, regulations and definitions (which Mr. Lips chooses to ignore).

In summary, the Division's AVF determination which incorporated the statutory and regulatory definitions of "alluvial valley floor" and "upland areas" is the only correct way in

which to construe the AVF rules. The evidence shows that the Division's decision was consistent with the applicable statute, rules, and regulatory guidance available for making an AVF determination. Finally, Petitioners failed to establish that the Division's decision was arbitrary and capricious, while the Division and Alton showed that the Division carefully reviewed the available information and made a conscientious decision which they carefully documented. The Board should defer to the Division's reasonable technical judgment on this issue and not disturb the AVF determination.

CONCLUSION

Petitioners have failed to meet their burden of proving that any relevant legal standard was violated by the Division's approval of the Coal Hollow Mine Permit. Nor have Petitioners shown the Division's Findings on any of the eight issues raised at hearing were "contrary to the evidence or arbitrary or capricious." Petitioners failed to show that the CHIA falls short of any applicable legal standard under the Utah Coal Program (issues 10 and 11). Rather, Petitioners presented abstract theories regarding the CHIA and material damage criteria which have been rejected by other State regulatory authorities. Alton's hydrologic monitoring plans have been found to adequately describe how monitoring data are used to determine hydrologic impacts on water quality and quantity and to provide appropriate safeguards and remedial measures (issues 12 and 13). ACD's geologic information was found to adequately describe the stratum below the coal seam and Petitioners failed to prove the existence of any aquifer below the coal seam adversely impacted by mining (issue 14). The Division found ACD's hydrologic monitoring plans along the Lower Robinson Creek to be adequate to determine the quantity and quality of surface and groundwater systems and Petitioners failed to produce any water quality samples to dispute this finding (issues 15 and 16). Finally, the Division's determination that the Sink Valley

fails to meet the definition of an AVF represents a reasonable and rational application of its technical judgment while Petitioners neglected to apply key definitions in their failed attempt to challenge this determination (issue 17). Consistent with the Board Order entered herein on January 13, 2010, the Board should defer to the Division's factual findings on the substantial scientific and technical matters underlying the permit decision. Alton respectfully requests that the Board dismiss Petitioners' allegations as to their hydrology and geology issues and affirm the Division's decision to approve the permit for the Coal Hollow Mine.

SUBMITTED this 23rd day of June, 2010.

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CERTIFICATE OF SERVICE

I hereby certify that on the 23rd day of June, 2010, I e-mailed a true and correct pdf copy of the foregoing **RESPONDENT ALTON COAL DEVELOPMENT, LLC'S CLOSING BRIEF ON HYDROLOGY AND GEOLOGY CLAIMS** to the following:

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